THE ARCHITECT & BUILDING NEWS

7 OCTOBER 1954 : VOL. 206 : NO. 15 · ONE SHILLING WEEKLY

- BUNGALOWS ON THE GOLD COAST
- A HUNDRED YEARS AND AFTER: I
- MULTI-STOREY FLATS BUILT WITH CLIMBING SHUTTERING

PUBLISHED IN LONDON SINCE 1854

Another *big* success by Brady—the electrically operated Brady Rolling Door, 39 ft. wide and 15 ft. high, installed at the Shell-Mex and B.P. Ltd., Depot at Barton. A perfect example of the reliability, efficiency and speed of operation exclusive to Brady.

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BIRMINGHAM	Rectory Park Road, Sheldon, 26
CANADA	David C. Orrock & Co. (G. Brady & Co. Canada Ltd.) 1405 Bishop Street, Montreal 25, Que. and also at 23 Scott Street, Toronto, 1
U.S.A.	G. Brady & Co. Ltd., 11 West 42nd St. New York 18, N.Y.
NORWAY	An Thorbjörnsen, Kongensgate, 14, Oslo And also at Cape Town

we shutter the world

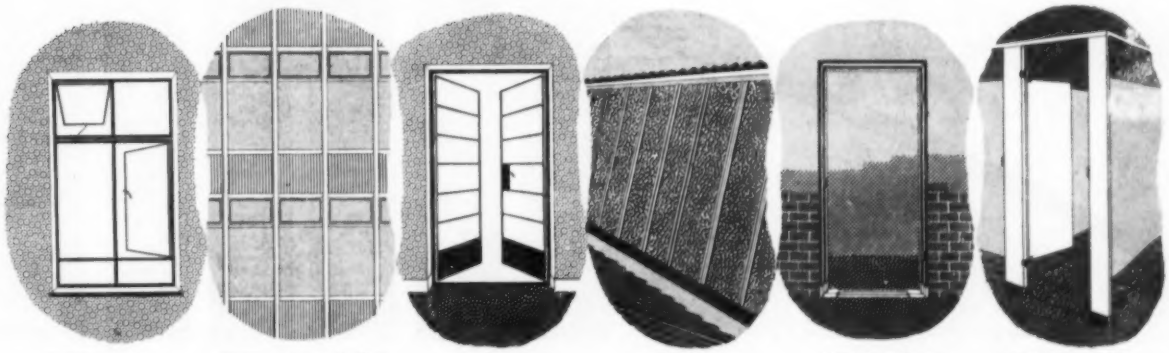
MANUFACTURERS OF BRADY HAND AND POWER OPERATED LIFTS

Quote "The show must go on" Unquote—Jim Saunders

Jim Saunders* has grease paint in his blood and metal windows on his mind. It makes a good combination. For an ex-Ralph Reader Gang Show man who can at the drop of a hat produce a play with a bunch of temperamental stars, the mere matter of supplying umpteen hundred windows on time to a dozen different architects is almost child's play ! Mr. Saunders is the Williams & Williams Newcastle Area Manager with a thirty-five man team under his command and more different industries concentrated in his coast to coast area than in any other part of Britain. "*You're on next, Mr. Saunders. And watch out ! That Architect in the stalls has a brickbat in his hand.*"

* MR. S. J. SAUNDERS, WILLIAMS & WILLIAMS LTD. Bank Chambers, 51 Grainger St., Newcastle-upon-Tyne (21353) *Other Offices at : Belfast (23762). Birmingham (Shirley 3064). Bristol (38907). Bromley (Ravensbourne 6274). Cardiff (27092). Glasgow (Douglas 0003). Leeds (21208). Liverpool (Central 0325). London (Sloane 0323). Manchester (Blackfriars 9591). Newmarket (2277). Nottingham (52131). Reading (2540). Sheffield (51594). Southampton (76252). Tunbridge Wells (3269).*

METAL WINDOWS **WILLIAMS & WILLIAMS** *Member of the Metal Window Association*



Metal Windows | Wallspan Curtain Walling | Metal Doors | Aluminex | Metal Door Frames | Roften Toilet Cubicles

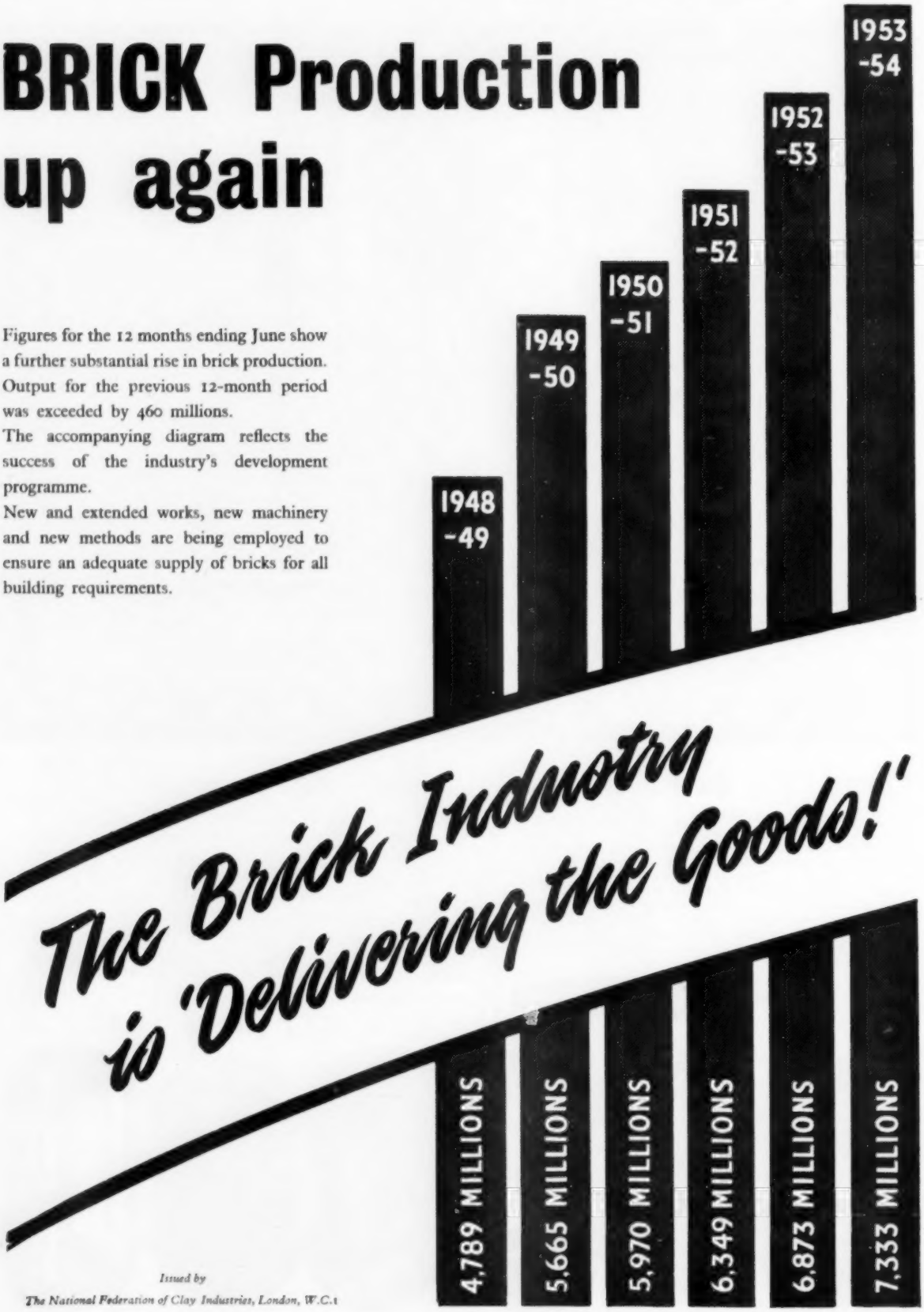
A

BRICK Production up again

Figures for the 12 months ending June show a further substantial rise in brick production. Output for the previous 12-month period was exceeded by 460 millions.

The accompanying diagram reflects the success of the industry's development programme.

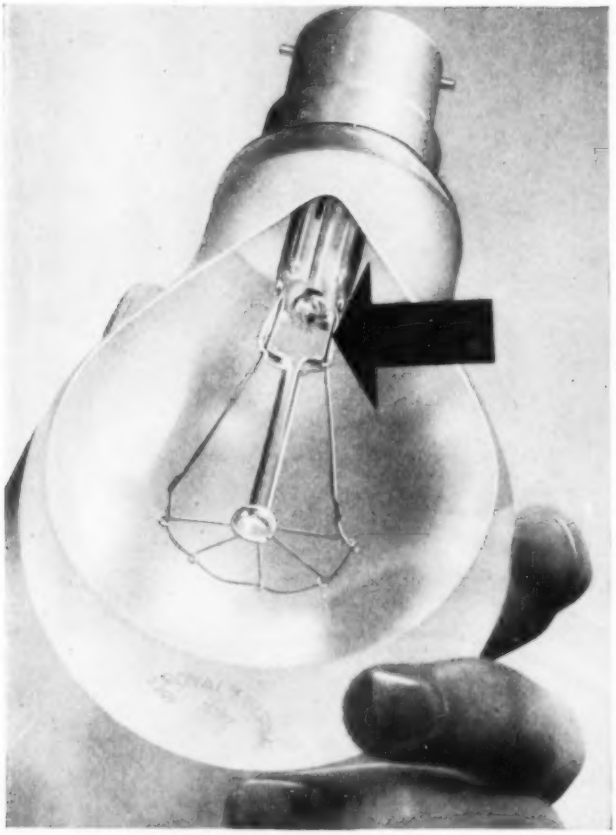
New and extended works, new machinery and new methods are being employed to ensure an adequate supply of bricks for all building requirements.



The Brick Industry is 'Delivering the Goods!'

Issued by
The National Federation of Clay Industries, London, W.C.1

Nothing is left to chance...



COPPER CLAD

To secure a gas tight seal at the point where the lead wires pass through the glass envelope of Royal "Ediswan" Lamps a special wire known as Copper Clad is used. This seal must remain gas tight over the range of temperature from cold to the highest value which the lamp attains when alight.

Copper Clad, made by a very specialised technique, consists of two metals hermetically bonded in such proportions that they will expand and contract at the same rate as the glass. This property together with the specially prepared surface, ensures that a perfect metal-to-glass seal is made.

* *This is but one example of the intricate operations in the manufacture of Royal "Ediswan" Lamps, calling for the highest degree of skill and the utmost care and precision.* Nothing is left to chance—*only the finest materials are used and there is strict control at each stage of manufacture.*

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L174

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PATENT APPLIED FOR

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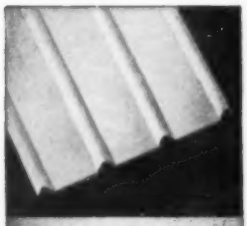
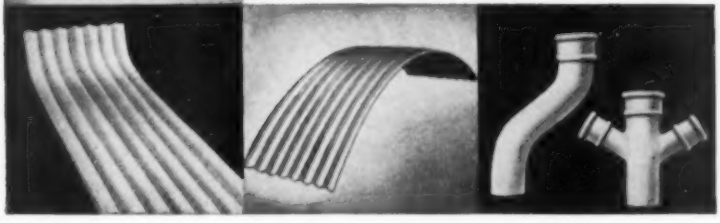
ATLAS

ASBESTOS CEMENT ROOFING MATERIALS





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1 DOMESTIC HOT WATER

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2 ROOM HEATING

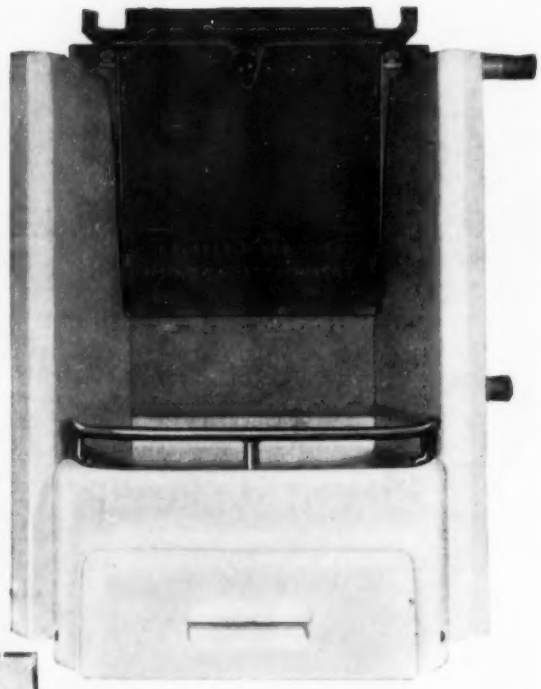
Efficient and economical room heating by coke or solid fuel. The Newbold grate gives maximum radiation at hearth level. Gas ignition for easy lighting.

3 BACKGROUND HEATING

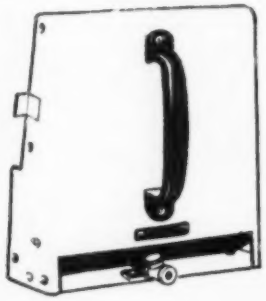
The large surface high efficiency type boiler supplies hot water for:—
(a) All domestic purposes
(b) Hot towel rails
(c) Heating two small radiators

4 HOT WATER IN SUMMER

When an open fire is not required the SUMMA gas attachment is a useful auxiliary.



The FULHAM FINNED BACK BOILER with NEWBOLD GRATE



'SUMMA' GAS ATTACHMENT

This unique and exclusive accessory is placed over the boiler on warm days when the open fire and central heating is not required. It will heat a 30 gallon cylinder of water from 50°F. to 120°F. within two hours.

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'Expamet' Expanded Steel being used as a reinforcement for concrete in the construction of the Trelleck Reservoir for the Monmouth Rural District Council.
CIVIL ENGINEERS: *Thomas & Morgan & Partners, Pontypridd, Glam.*
CONTRACTORS: *Norwest Construction Co. Ltd., Litherland, Liverpool.*

Concrete reinforcement with 'Expamet' Expanded Steel in reservoir construction

HERE you see a typical application of "Expamet" Expanded Steel — as reinforcement for concrete. "Expamet" Expanded Steel is the unique reinforcement that affords the highest degree of grip and bond in concrete. The shape of the meshes also assists in "distribution" of point or concentrated loads, and in preventing cracking of concrete due to shrinkage and changes of temperature.

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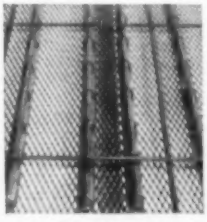
What's your problem?

We will gladly submit designs and estimates for the reinforcement of all forms of concrete construction. Let us know what application for "Expamet" you have in mind. Literature and samples will be sent on application. Please write or telephone.

Super RIBMET

Super "Ribmet" is shuttering and reinforcement combined.



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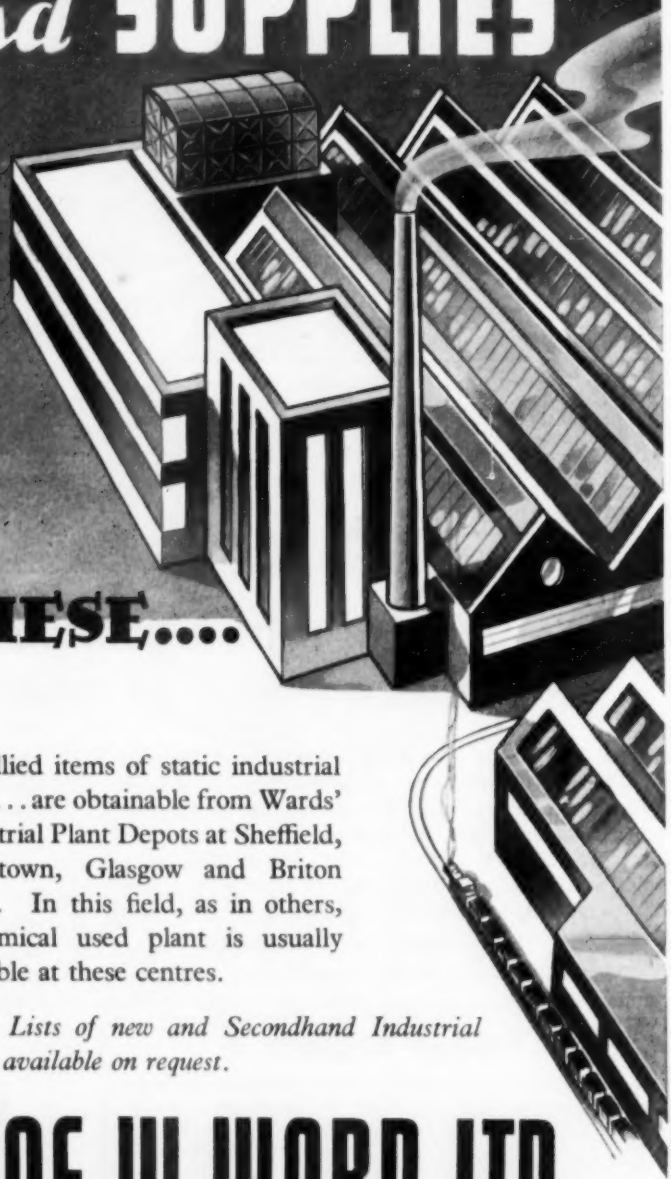

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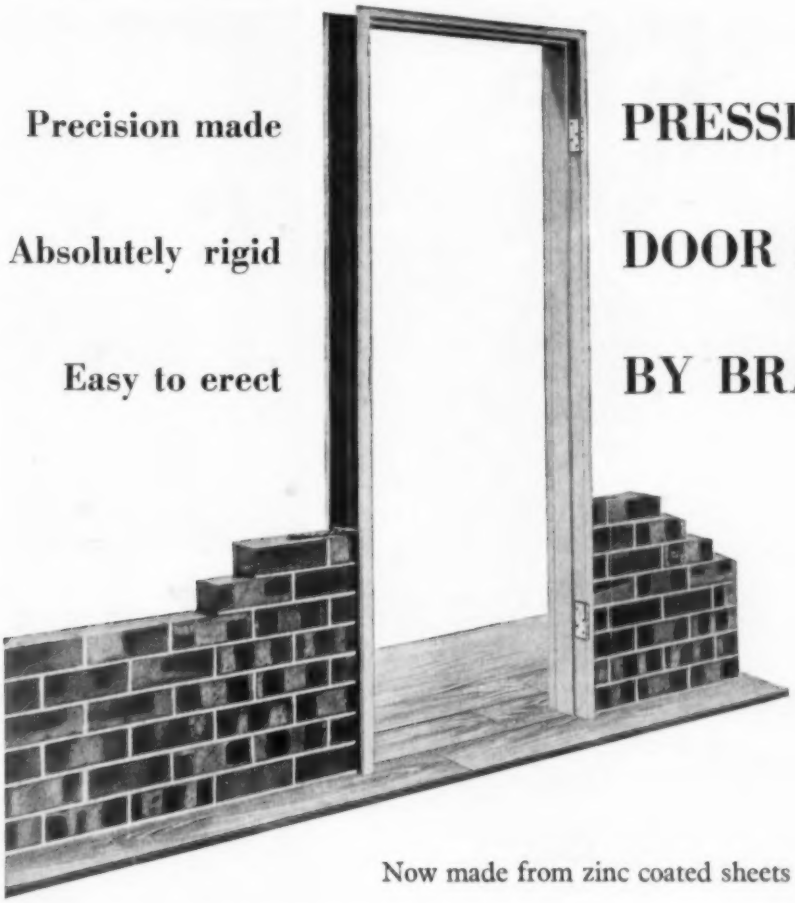
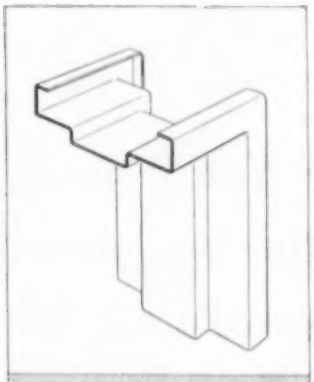
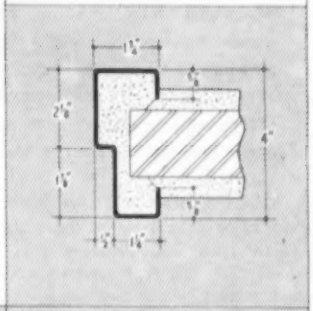
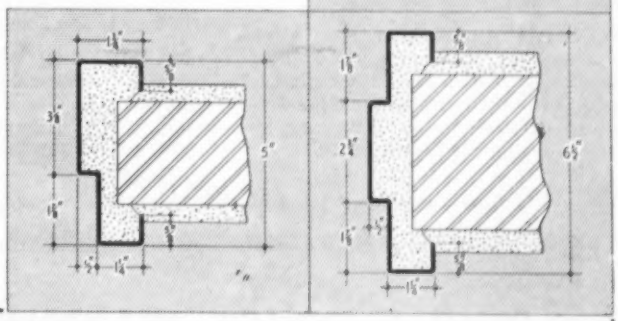
PRESSED STEEL DOOR FRAMES BY BRABY









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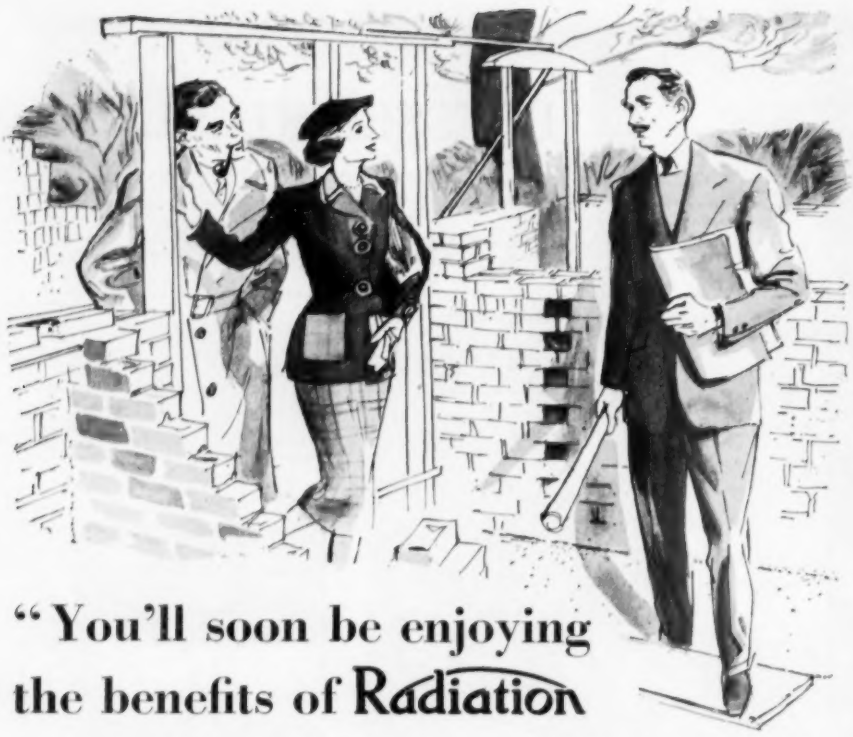

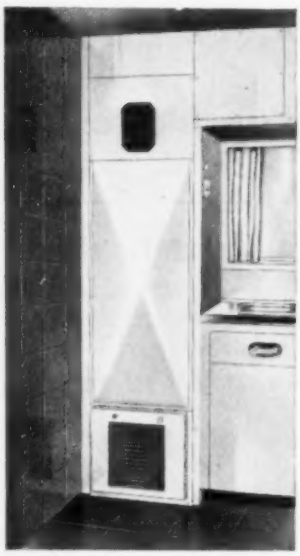

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We can supply the "Reynardo" tile with smooth, sanded, or colour glaze finish, as required.
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No hemp, red lead or other jointing material is required when fixing the cover, other than the India Rubber Ring which is supplied with the tank. This ring, together with the grummets fitted under the bolt heads inside the tank, enables a perfect seal to be made in much less time.

The cover itself is slightly convex to give additional strength, and the turned-over edge of the manhole presents a smooth rounded surface which cannot injure the hands or arms when installing the tank.

Ask for List No. A 873.

'Harco' Patent Manhole & Cover

Please obtain your supplies through your usual Builders' Merchant or Ironmonger.

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Patent No. 664453

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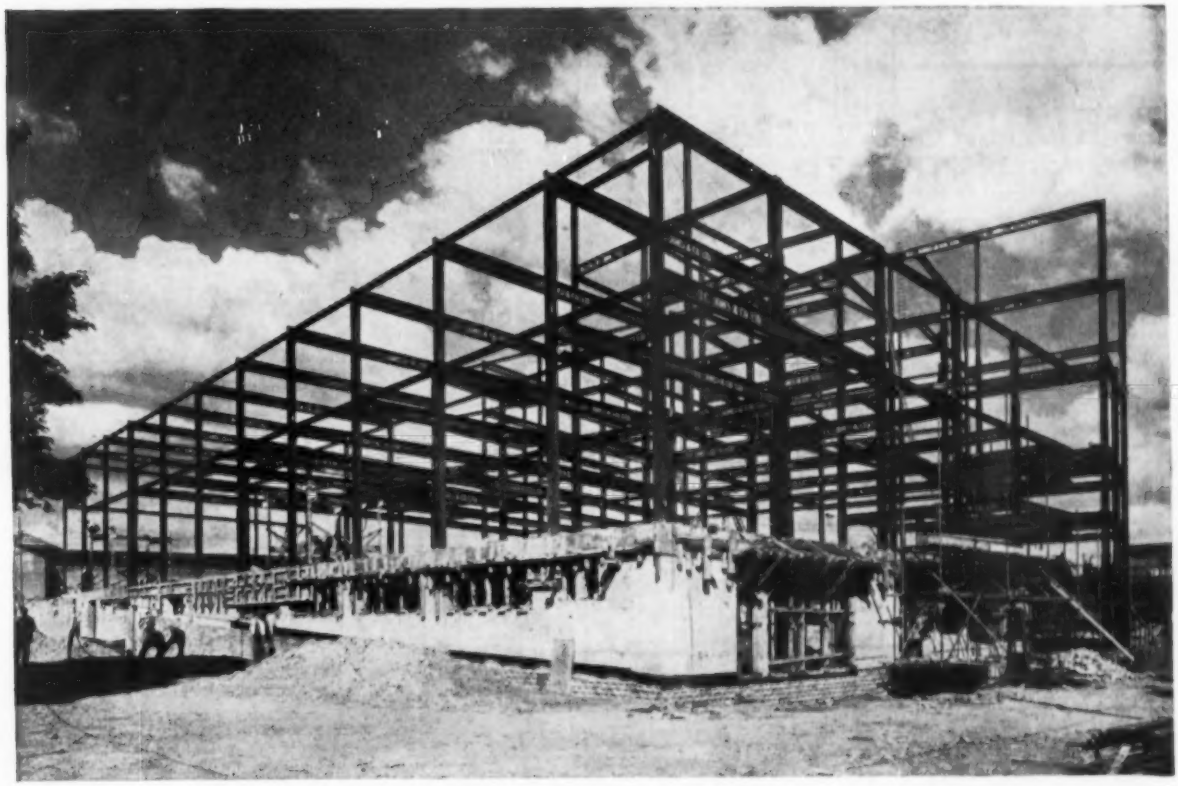

B.B.C. TELEVISION CENTRE AT WHITE CITY

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Development of this new Television Centre is being carried out under the direction of:—
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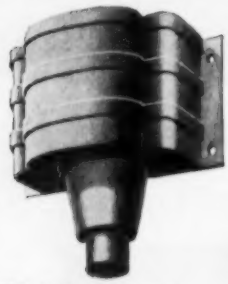
5311/JSE 52

BUILDING FRONT PANELS



RAIN WATER HEADS

Building front panels, decorative and enduring . . . Rain water heads, elegant as they are purposeful . . . these are among the specialised cast-iron products of Lion Foundry.

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The DYEING OF WOOD

An answer to the colour question

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COLRON is made in 12 attractive shades which are easily intermixable to give a practically limitless variety of colour effects. Waxed with Ronuk Polish, dressed with Ronuk Floor Seal, Ronuk Plastic or other quality finishes COLRON provides the ideal treatment for *all* interior woodwork.

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COLRON is specially recommended for giving *soft timbers* a hardwood-like finish and to enhance the beauty of their grain. Even the softest woods will polish brilliantly after treatment with COLRON — which is non grain-raising and can be safely used on all short-grained timbers.

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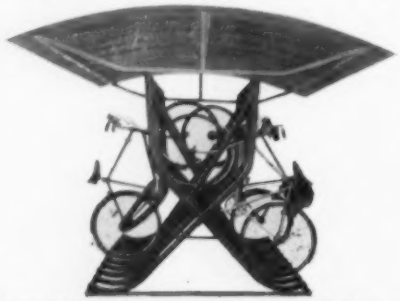

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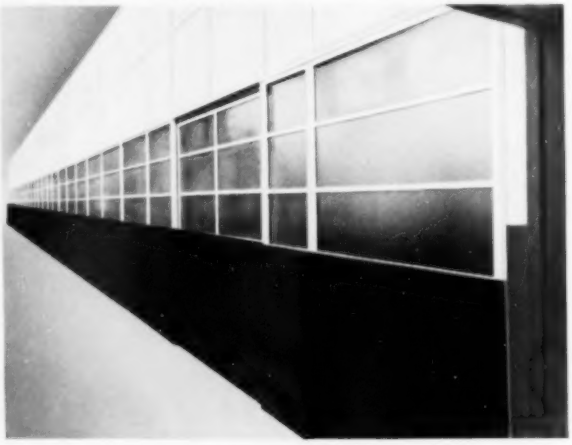

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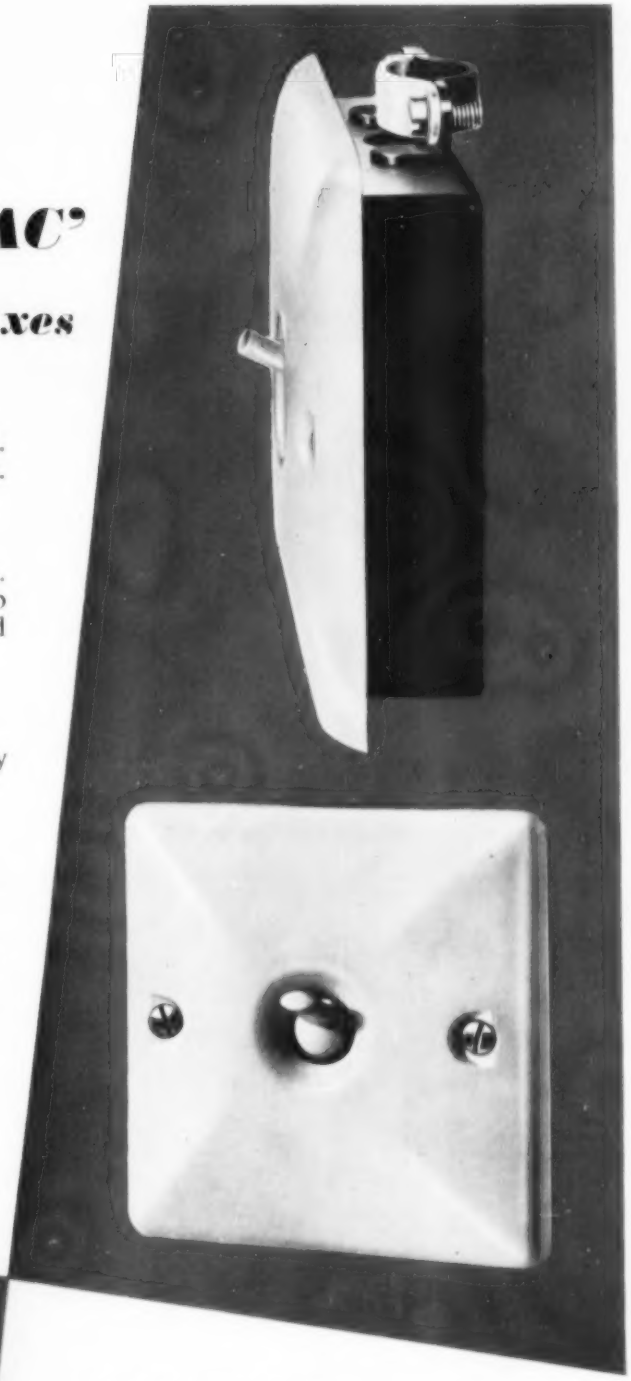

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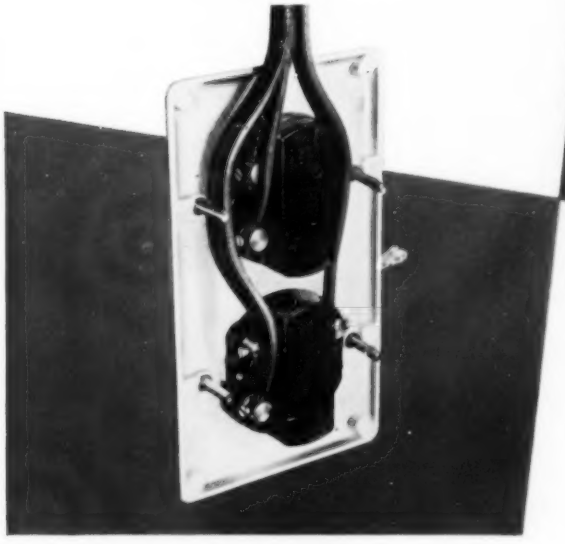

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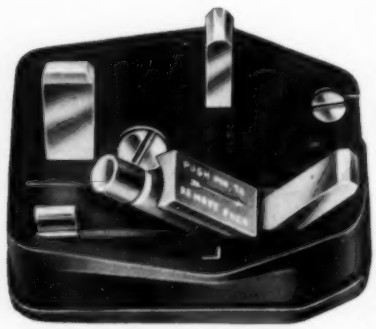

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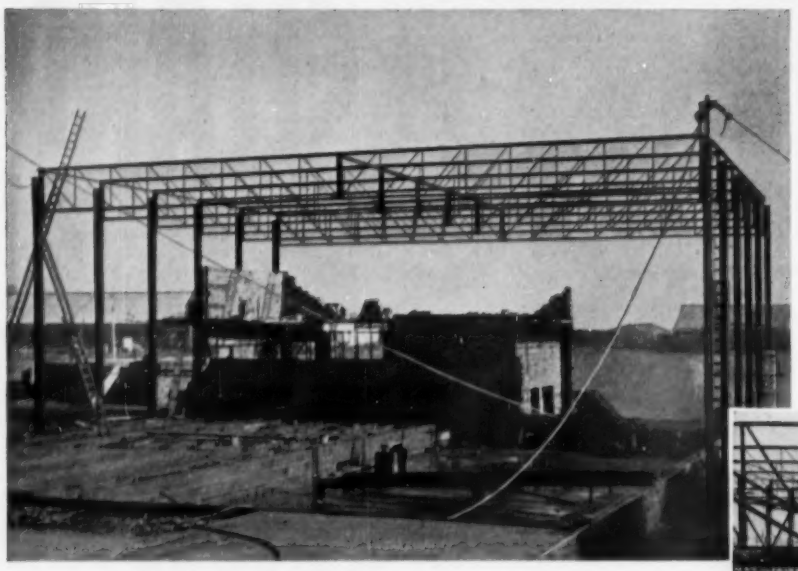

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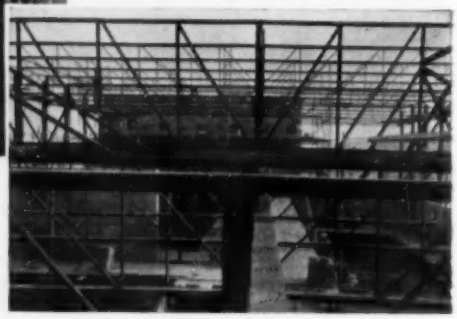

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Vol. 206 No. 15

THE ARCHITECT & BUILDING NEWS

7 October 1954

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RESTRICTING COMPETITION

IN 1952 the Minister of Works told the House that it was clear from the constitution of the London Builders' Conference that it contemplated arrangements which must limit competition and raise the price of buildings. He said that the obvious thing to do was to refer the matter to the Monopolies Commission (and this journal agreed), but that was a long and cumbrous procedure, and he wanted quicker results if he could get them. Sir Alfred Hurst, Chairman of the L.B.C., preferred, however, to submit to the enquiries of the Monopolies Commission rather than give evidence before the Howard Robertson Committee. (Since reading their report he was quoted as saying that they were a lay body who do not know anything about the building industry.)

The Report just published* is a fairly severe indictment of the price fixing arrangements of the L.B.C., and recommends that they be brought to an end. Press comment has been sharp, and the reason for this is quite understandable. As the *Financial Times* says, "It does not appear that this practice has had, in fact, a substantial effect on building prices. It has, however, had a considerable effect on the morale of the building industry. Architects and owners knew that the London Builders' Conference existed, but they did not know precisely what it was doing. This was a circumstance which was bound to arouse suspicion, and it did, in fact, cause considerable ill-feeling in the industry."

It is significant of our times that anything that is not open to the Press and made known to the public tends to be regarded as a conspiracy. If the L.B.C. and builders generally are now regarded as a sinister band of plotters they have only themselves to blame, for the public would have understood and sympathized with the risks builders take and problems they have to contend with if they had been open about them. The public is now probably confused about tendering. Where it imagined there was open competition it now learns through the Monopolies Commission that this was not so in many cases. On the other hand it has had to learn that the Howard Robertson Committee's preference for selective tendering, which at first sight sounded ominous, does mean, within selected limits, genuine competition—or we hope it does. It all sounds very contradictory and it may be some time before the dust settles.

The Chairman of the L.B.C., Sir Alfred Hurst (he is also Chairman of the Building Centre), did not improve matters when he told reporters that the Monopolies Commission had not solved the problem, "but has invited the industry to return to the Law of the Jungle as it operated before 1936 with very disastrous results to the whole industry." As the operation of the L.B.C. has been in suspense over the last two years, these words imply that the law of the jungle has been in operation during the same period (a reflection on the builders that can hardly have been appreciated).

The public may also want to know how it was that if architects and surveyors knew about practices which were against the interest of building owners that it was left to the Monopolies Commission to make it public. Now would be the best time to clear up the whole question of price rings and monopolies in building materials. The best way to get a fish-hook out of one's finger is to push it through. We also hope that it will be made common knowledge that the R.I.B.A. published in September, 1939, a statement recommending the use of a declaration by all builders tendering to the effect that the tenders were open and included no adjustments or arrangements with other persons, and that this clause was frequently crossed out and ignored by builders. Below is a very brief summary of the Commission's conclusions.

* * *

The Commission were asked to see if the "conditions" to which the Monopolies and Restrictive Practices (Inquiry and Control) Act, 1948, applies prevailed as respects the supply in the Greater London area of new buildings costing more than £1,000 each to construct. They have found that the conditions do prevail, since more than one-third of such buildings are supplied by persons who conduct their

* *Report on the Supply of Buildings in the Greater London Area. Published for the Monopolies and Restrictive Practices' Commission by H.M.S.O., 3s 6d*

affairs in such a way as to restrict competition. In January, 1953, members of the London Builders' Conference (L.B.C.) together with "co-operating non-members" (non-members who co-operated with the Conference in particular competitions) were responsible for about 65 per cent of the work done in that month in terms of value and labour. The Commission consider that competition is restricted by the arrangements operated by the L.B.C.

The Commission were also asked to report whether two particular practices were "things done" as a result of or for the purpose of preserving those conditions and if so whether they were against the public interest. The two practices were the communication of the amount of proposed tenders to third parties by agreement or arrangement, and the adjustment of the amount of proposed tenders by agreement or arrangement with third parties. The Commission find that these two practices form an integral part of the L.B.C.'s arrangements and are "things done" as a result of and for the purpose of preserving the conditions to which the Monopolies Act applies.

Commission's Conclusions on the Public Interest

The L.B.C.'s Arrangements. Since any communication or adjustment of proposed tenders by arrangement between builders means that "the tenders cease to be the independent offers they are held out to be" the Commission consider there is reason to suppose that both of these practices are *prima facie* against the public interest.

The Commission pass on to consider whether these practices are beneficial or harmful in the particular circumstances in which they are operated. The following considerations are amongst those taken into account:—

(1) The fact that the Committee on the Placing and Management of Building Contracts (the Simon Committee) recommended in 1944 that tenderers should be limited in number and carefully selected does not, in the Commission's view, justify builders on their own trying to deal with the situation by means of a scheme, such as that operated by the L.B.C., designed to limit the choice of building owners.

(2) The Commission have found no support for the Conference's claim that its arrangements have resulted in a tendency towards smaller competitions or the inclusion only of builders of equal standing.

(3) The Commission are not satisfied that the application by the L.B.C. of its Fair Price Scheme (involving the communication and adjustment of the amount of proposed tenders) results in prices which are as fair to all parties as the prices that would result from independent tendering.

(4) The Commission believe that the L.B.C.'s arrangements, in view particularly of the secrecy which largely obscures the effect of their operation on particular contracts, have intensified ill feeling due to lack of confidence between architects and builders, to the detriment of that co-operation which is so necessary to the efficient working of the industry.

(5) The Commission do not accept the L.B.C.'s argument that, if the market for building became severely competitive, its arrangements regularly applied could provide builders with the financial strength they would need to resist the cutting of prices and quality. Nevertheless, they think that in such conditions the Conference could, and no doubt would, extend its arrangements, and they consider this would not be desirable.

(6) The Commission consider that while the L.B.C.'s Tendering Scheme (involving the adjustment but not the communication of the amounts of proposed tenders) achieves some redistribution of the incidence of tendering expenses between building owners, it does not effect any improvement over the normal method of allocation of tendering expenses as an overhead expense. And even if, as the Conference says, its arrangements by reducing the size of competition could lead to a reduction in the total expense of tendering which falls on the building industry, in the Commission's view such saving may be too dearly bought at the price of restricting competition in the industry.

The Commission conclude that the effects of the L.B.C.'s arrangements as a whole on the public interest are harmful and, therefore, afford no justification for the two practices which form an integral part of those arrangements, and that both of the practices are against the public interest.

Cover Prices.—The Commission regard the practice of submitting cover prices (tenders meant to be sufficiently high not to win the contract) as coming within their terms of reference in relation to the public interest only when there is a mutual understanding between two or more builders affecting the amount that at least one of them is to quote. In so far as the practice forms part of the Fair Price Scheme, the Commission have taken account of it in their general conclusions on the L.B.C.'s arrangements. With regard to its use in second competitions, the Commission think that the proper course for a builder who disapproves is to decline to tender or re-tender, and regard the formation of a "ring" for the purpose of inducing the building owner to accept a particular builder's tender as undesirable. They conclude that such circumstances afford no justification for the practice of adjusting the amounts of proposed tenders by mutual arrangement.

Commission's Recommendations

The Commission have recommended that agreements or arrangements of the kind specified in the reference should be brought to an end. They have made no recommendation as to the method by which this should be done, as in their view it can be determined only after discussion between the appropriate Government Departments and the parties concerned.

EVENTS AND COMMENTS

ABSENT WITHOUT LEAVE

I am sorry that I failed to appear last week. The work was done but somehow must have missed the post. I was taking part in "manœuvres on the Plain" and had actually included a small paragraph to say that I might get lost during the following week. As it happened I managed to navigate myself more or less into the right map square but my copy got lost.

TRAFFIC

"Well, gentlemen," said the Brigadier, "The problem of moving slow and fast-moving columns of vehicles on narrow country roads has not yet been solved. If any of you have any bright ideas about solving it I should like to hear from you. I am not very hopeful, however, as you are all Londoners and you have not shown yourselves particularly adept at dealing with such problems there during the past 100 years."

F.L.W.'S SON IN TROUBLE

Those who find the rules and regulations of A.R.C.U.K. a bore may be thankful that they do not practice in America, where each State has its own laws and issues licences to architects to practice. According to the *Architectural Forum*, John Lloyd Wright, F.L.W.'s 61-year-old son, has recently done a job in California, as a result of which he was charged with four technical offences. A warrant for his arrest was issued in January. He was released on bail. Of the four charges two were concerned with practising architecture in California without a licence, and two with practising civil engineering in the same conditions. The engineering charges failed as being too vague, and the judge upheld Wright's objection to the architectural charges on the ground that the business and professional code was contradictory. Revised complaints have now been filed by the architec-

tural examiners and the game goes on. Wright is licensed to practise architecture in three States and civil engineering in at least one. He says that in California he does not advertise himself as an architect but has the letters A.I.A. after his name. The A.I.A. considers that California has no right to interfere with Wright's use of these letters.

In 1946 Wright was refused a California licence because he failed to pass a civil engineering section of the standard test given to all architect applicants.

In 1924 F.L.W. also had a brush with the California Licensing Board. He applied for a licence but never bothered to pick it up. He has since received it.

Meanwhile, Mr. John L.W.'s client, round whom the storm centres, likes his building very much but is very unhappy that "a nice man like Mr. Wright" should be put to any embarrassment on his account.

IN THE STEPS OF MARCO POLO

Although the Venetian did not, I think, follow a great circle course on his eastern journey, he could not have had a livelier sense of curiosity than Sir Hugh Casson.

The *Evening Standard* alleged that Sir Hugh was nearly brained by a falling picture at the eve of departure party at the I.C.A. The picture actually fell on Lady Casson. I would have expected even the Beaverbrook Press to have been able to differentiate between the two.

The odd thing is that although one can very rapidly get to "Moscow and places left," as Sir Hugh described them, it takes an interminable time for the pigeons, or whatever it is that they use, to return across the Steppes. One or two wisps of news have, however, reached his friends. Having arrived late and tired in Prague the party asked for rest before proceeding to Moscow, with the result that when they did arrive in Moscow the authorities "really couldn't say" when the next plane would be leaving for Peking. At the time of writing the party was making preparations for a stay of some days. Between Prague and Moscow bad weather benighted the party at Minsk, where they spent the night in a dormitory for twelve.

MAJOR LONGDEN

I was astonished to hear that Major Alfred Longden, who died recently, was 78. I would have guessed that he was 65. He had for some years presided over Sir Harold Wernher's collection at Luton Hoo. Before that he was for many years in the Government Service as an art adviser and organizer of exhibitions.

During the war Major Longden accompanied an exhibition of British paintings to Oslo. On the morning after his arrival he was awakened by an unusual commotion and looking out of his window he saw German tanks and troops. With a Swede from the same hotel he managed to dodge the Germans and eventually arrived at the frontier. Longden had no visa for Sweden so he hid in the village and the Swede went on to Stockholm where he informed the British authorities. A visa was somehow delivered to Longden and he returned to England via Russia, Turkey and France. He left Paris during its first air raid.

I had the good fortune to be taken round Luton Hoo by Major Longden. His enthusiasm was unbounded and he combined with it not only great knowledge but a pleasant informality. I remember he pointed out a splendid great vase with the cry "Now there's a cracking pot for you!"

Taken at the L.M.B.A. Luncheon to the Lord Mayor. Top picture The President, Mr. R. S. Williams and Sir Walter Monckton, Minister of Labour. Below it, The Lord Mayor, Sir Noel Bowater, showing his Badge of Office to Mr. L. J. Holloway.

* * *

TROPICAL ARCHITECTURE AT THE A.A.

I hear that applications for the first A.A. course on Tropical Architecture have very greatly exceeded expectations. About 12 were expected. To date the course numbers 27. The department has found it necessary to increase its staff and an advertisement for a part-time master will be found on another page.

THE GROOTHANDELSGEBOUW

I thought Patrick Horsbrugh's report on this vast building was most interesting. I watched the project from the foundations upwards and on my last visit drove my car through it at first-floor level. As an idea I think it is excellent but I also think Horsbrugh is too kind about its design. His drawings are very flattering to the architecture. He says that the structure is not "contemporary"

in the thin and spindly sense, but broad and robust! I think it is downright heavy.

UNICEF CHRISTMAS CARDS

Roger Duvoisin has designed five Christmas cards for Unicef. They are boxed in tens—two of each design—with greetings in the five official languages, and cost 7s 6d post free from Unicef Greeting Card Fund, Clive House, 7th Floor, Petty France, London, S.W.1.

Last year's Lewitt and Him designs will be on sale again at the same price, 7s 6d for 10.

If you make your own Christmas cards you may like to have some Unicef ones without the greetings for use as invitation cards. The price is the same.

Last year the fund raised £34,000. The new designs are very gay and show children at play in Austria, Mexico, Korea, Indonesia and Iran.

THE MITHRADATUM

I have missed most of the excitement and remain more or less unmoved by the ruins laid bare on the site of Bucklersbury House. The finds are interesting but, I understand, less rich and informative than those at another Mithradatum uncovered near Hadrian's Wall some years ago. That anyone should have considered, even for ten seconds, spending half a million pounds on its preservation is to me utterly fantastic. Surely the main interest of the discovery lies in the fact that we can see the actual place where strange heathen rites were performed a very long time ago. If this is so the public-spirited action of the building owners in proposing to spend £25,000 on moving the ruin to another site would seem to be wholly misguided. Anyway, I can think of many more worth-while preservation jobs on which to spend £25,000. Let the ruin be fully documented, let models be made, let the finds be suitably displayed in the B.M. and then let the ruin be abolished.

THE RATE FOR THE JOB

Some weeks ago I wrote about an advertisement for a town planning job in Canada and included some Canadian Press comments on it. To show that the same sort of thing can happen here, I give below the text of a D.S.I.R. advertisement for an Experimental Officer at the B.R.S.

> ". . . to prepare abstracts from technical papers in the fields of chemistry, physics, engineering, building operations, architecture and sociology. Qualifications: Pass Degree or Intermediate Standard in scientific subjects, preferably including chemistry and physics. Fluent translating ability in German and French and a willingness to learn cognate languages. Experience in abstracting valuable. Inclusive annual remuneration (45½ hours) £710—£875 (men), £612—£749 (women). Prospects of establishment for candidates under 21."

I would have thought that this job required a really good man or woman. Does the D.S.I.R. hope to recruit such a person at that salary?

TOWN PLANNING IN STOCKHOLM

A Swedish architect friend of mine who has just been on a visit to England was full of criticism of some of the T.P. developments in Stockholm. He fears that the policy of building high girder bridges everywhere will eventually ruin all the vistas in the capital. The State railways are, he says, principally to blame. At one time it was hoped either to put the main line in a tunnel or to divert it from its present route through the centre of the city. The T.P. authorities have no control over the railways, which do not even have to obtain approval of their schemes from the city.

My friend also criticized the slowness of construction on the motor road between Stockholm and Södertälje. Work has been going on for five years on this 35-mile stretch and is not yet finished. At first granite kerbs with an upstand were provided but so many cars skidded into them and turned over during last winter that they are now being removed and a flush kerb substituted. Six traffic lanes are allowed for but during peak periods traffic is mainly in one direction, so that only three lanes are used. Arrangements could easily be made, says my friend, to use an additional lane, but the police will not do it. His final comment was that, whereas the main job of the Paris police was to hurry the traffic along, the Stockholm police spend all their time stopping it.

ABNER

New Administration Block, University of Mexico, Mexico City.

* * *

NEWS OF THE WEEK

Statement by the Minister of Works

The Minister of Works, the Rt. Hon. Sir David Eccles, K.C.V.O., M.P., speaking on September 27 at the opening of an exhibition at the Arts Council in St. James' Square, London, of photographs of ancient monuments arranged by *The Times* in association with the Ministry of Works, said:—

"The Ministry of Works thanks and warmly congratulates *The Times* on this excellent exhibition. As anyone familiar with the back page of this great newspaper would expect, the photographs are of a very high standard.

"The public has here a much needed chance to see something of the nation-wide work of preservation done by the Ancient Monuments Division of my Ministry.

"Over two million pounds of the taxpayers' money has been spent on this service since the war. More than 9,000 monuments are now scheduled, which means that the owners cannot alter, much less destroy, them without permission. We are starting to mark these monuments with a conspicuous notice and to inspect them at regular intervals. This is a long job and a costly job but we must do it and I confidently hope for help from the archæological societies.

"About 600 of the most important monuments have been taken into guardianship. Once this is done the monument is safe for all time. My Ministry then has the duty to repair, maintain and show the monument to the public. Whether we can take further monuments into guardianship depends on the money available.

"The entrance fees and profits from guides and postcards do not pay the cost of guardianship, so the deficit has to be met from money voted by Parliament. As the responsible Minister I must see that this money is well spent. Obviously I have to work to a budget and therefore when another monument comes to light, or a well-known monument is threatened with destruction, which happens again and again it cannot be taken into guardianship without counting the cost and the effect on other monuments already in my charge or known to be on the danger list.

"One of the considerations, which is exceptionally strong in the case of the Temple of Mithras, is that the law obliges the Minister of Works, fairly enough, to pay compensation to the owner of a monument if he suffers when the monument is preserved. As exact an estimate as possible is being made of the loss which the owner of the Temple of Mithras would suffer if it were preserved. When we know this figure we can consider whether the sum can be raised in one way or another.

"I hope this exhibition, by showing the great range of my responsibilities, will help to put Mithras in perspective. Naturally when one considers each threatened monument in isolation there appears to be a cast-iron case for spending more of the taxpayers' money, and I should like you to know that the present Government is spending this year on preservation of historic monuments and buildings twice as much as any previous Government has ever spent—£600,000 against £300,000.

"The Ministry of Works also finances excavations including that which has led to the discovery of the Temple of Mithras. Today there are forty such excavations going on up and down the country which are receiving grants totalling £20,000 a year from my Ministry. Many of the sites are in remote places where there is not much prospect of getting any money for digging from private sources. But in the City of London one does hope there may be public-spirited individuals and firms who will help Mr. Grimes to follow up on other sites his great discovery of the Temple of Mithras. Mr. Grimes has only found the Temple because, after private subscriptions fell off, a grant from my Ministry has kept him going.

"I have now asked him and his Council to prepare a comprehensive plan of the digging they would like to do on other bombed sites. This will cost quite a lot of money. The Ministry will help but we shall need subscriptions from the public.

"We do not believe that all the funds for preservation should come out of the rates and taxes. Therefore I welcome this exhibition greatly hoping that it will lead to a wider enthusiasm and more public support for the care of churches, abbeys, palaces, castles, country houses, Roman and Celtic remains and all monuments of outstanding importance."

Temple of Mithras

The Minister of Works, on October 1, gave the following announcement to the Press:—

It has been decided that the cost of preserving the remains of Mithras in its present position, estimated at more than £500,000 cannot be met from public funds. Happily, however, Mr. A. V. Bridgland, and the owners of the site of Bucklersbury House, have made a most generous proposal which the Government believe will be widely welcomed. The Temple is to be moved from its present low level and put up again in an open courtyard of the Queen Victoria Street front of the Bucklersbury House site. The remains will thus be preserved in a convenient position some 80 yards from where they were found. The work must be fitted into the building operations on the site and the Temple should be in its new position in two years.

This discovery emphasizes the urgent need for the Roman and Mediæval London Excavation Council to press on with this work. The Council, therefore, with the strong support of the Ministry of Works is appealing to all those who have shown such interest in the Temple of Mithras to subscribe sufficient funds to carry through the Council's programme of excavation in the City of London. Mr. Grimes and his team may well make other most important discoveries.

Housing Figures

In the first eight months of 1954, 224,697 permanent houses were completed in Great Britain compared with 197,347 in the same period of 1953.

The number of permanent houses completed in Great Britain during August was 26,843 compared with 24,837 in August last year.

COMING EVENTS

Council for the Preservation of Rural England

October 7-9. Fifteenth National Conference, Country and Coast—Some Urban Impacts, Shanklin, Isle of Wight.

The Institute of Fuel

October 7 at 10 a.m. Opening Conference of a Special Study of Sulphur Removal and Recovery from Fuels, at The Institution of Mechanical Engineers, 1, Birdcage Walk, S.W.1.

October 7 at 5.55 p.m. Presidential Address, by Dr. Stanley B. Hamilton, M.Sc., Ph.D., B.Sc. (Eng), A.R.C.S., M.I.C.E., M.I.Struct.E., at 11, Belgrave Street, S.W.1.

The Illuminating Engineering Society

October 12 at 6 p.m. Presidential Address entitled Lighting and Electricity Supply, by Mr. E. C. Lennox (Fellow), at The Royal Institution, Albemarle Street, W.1.

Architectural Association

The A.A. Students' Committee has had to postpone the Forum on Das Fertighaus from Wednesday, October 13, until the beginning of November, as they have just been informed that the Manager of the scheme will be unable to come to London until then.

The Modular Society

October 14. Visit to Coventry and joint meeting with the Coventry Society of Architects.

The Royal Institution of Chartered Surveyors

October 14 at 5.30 p.m. Land Surveyors' General Meeting. Talk on Survey Operations Overseas, by J. W. Wright, M.A., F.R.I.C.S., Chief Survey Officer, Northern Province, Anglo-Egyptian Sudan, at 12, Great George Street, Westminster, S.W.1.

Other News on pages 426 & 427

LIBRARY BOARD BUNGALOW, ACCRA, GOLD COAST

architects:
JAMES CUBITT, SCOTT & PARTNERS

THIS bungalow was built for the Director of Library Services by the African Finance and Investment Corporation Ltd.

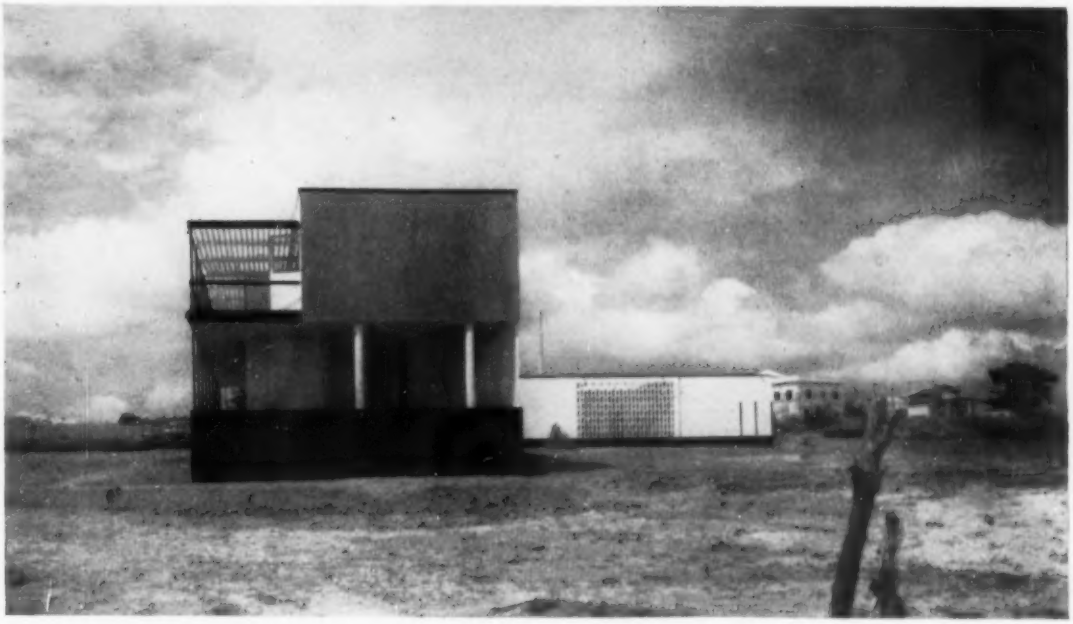
The site is on the West slope of a very wide and shallow valley running North and South and ending at the sea at one end. The valley is comparatively clear of trees and other obstructions so that a cool sea breeze is practically always in evidence.

Construction

The structure is of reinforced concrete frame with infillings of sandcrete blocks and perforated concrete blocks and various types of timber panel.

Floor finishes are coloured black terrazzo tiles in the main wing; sage grey semastic tiles in the pantry; remain-

[Continued on page 422



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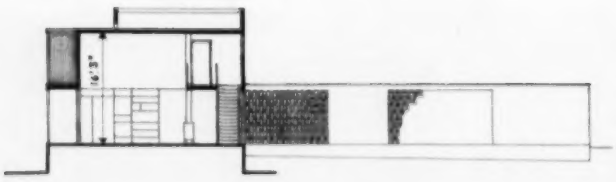
Library Board Bungalow, Accra



Continued from page 420

ing ground floors, cement paving. The upper floor is entirely finished in sage grey semastic tiles. All joinery is hardwood either polished or painted.

Externally the rendered walls are white with a few areas colour-washed in dark tones. Frames are white and timber shutters, etc., dark green-grey.

Interior

Walls are predominantly white with a few areas in coloured distemper. Furniture coverings and fittings are mainly relied upon to give sharp accent against the predominantly black, grey and white interior. The two-storeyed living room is matt black in colour and the ceiling over dining and study areas is grey. Services include a Pyrotenax electrical installation; two storage heaters for hot water and a septic tank for drainage.

FOUR SEMI-DETACHED HOUSES

ACCRA, GOLD COAST

architects:

JAMES CUBITT, SCOTT & PARTNERS

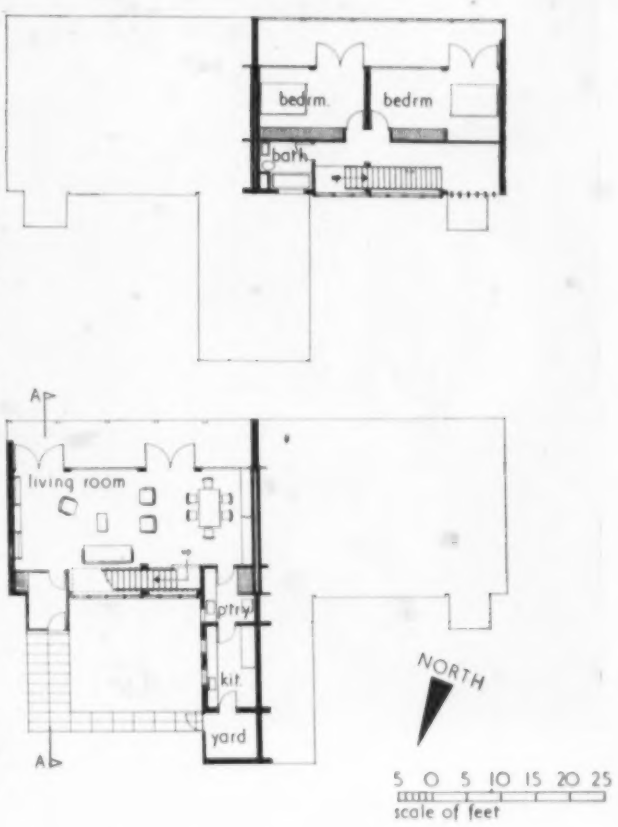
THE site has been divided into four equal plots running north-south. A drive-in strip with garages at the west end leads off Osu Avenue. The main blocks of the houses are set back from this drive-way some 40ft. Orientation of the main blocks is north-south, with blank east and west walls.

The main ground-floor living space is 34ft × 18ft, this area containing entrance lobby with clothes cupboard, stairs to upper floor and pantry. The main living and dining area, separated by a movable screen, opens out to the south on to a terrace over which is situated the upper floor balcony.

A 12ft roofed space separates the pantry from the kitchen, at the north end of which are the boys' quarters with their bathing room (or generator room in every other house).

A 12ft × 8ft entrance canopy is provided at the main entrance doors, approached from the drive-way over a paving-stone path.

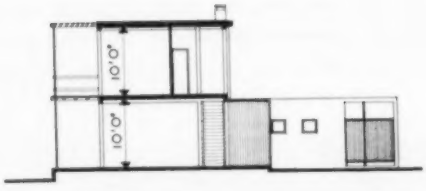
On the upper floor are the two principal bedrooms, a bathing room and a 9ft cross-ventilated sleeping balcony. Both the bedrooms lead out on to a long verandah on the south side stretching the entire length of the houses and covered by wooden louvres.



A pair of the semi-detached houses: plans above.

Construction

Construction consists of R.C. posts and main beams with timber secondary beams. The walls are 4in, 6in and 9in hollow clay block. The party or dividing walls between houses are of two 6in skins of hollow clay blocks with a 2in air-space. Roof construction is of reinforced clay pots on R.C. beams.



On this page, views of the living - room.

A pair of the semi-detached houses at night. Below, a detail of the fenestration. All main glazing areas have sliding louvred screens. The windows themselves are also sliding to obtain maximum cross-ventilation. The large glazed areas shown on the elevation can be sub-divided into smaller glazed areas.

Four Semi-detached Houses, Accra

Berks, Bucks and Oxon Architectural Association Annual Dinner

The annual dinner of this Association was held on September 24, at St. John's College, Oxford, by kind permission of the President and Fellows. The President of the Association, Mr. David Booth, F.R.I.B.A., was in the chair.

Members and their guests met a familiar atmosphere of building as they entered the College for the "floor" of the quadrangle was being remodelled to Sir Edward Maufe's design. A reception in the Junior Common Room preceded the dinner in the Hall; and it was a great pleasure to dine in such agreeable surroundings.

Mr. Booth, in proposing the toast of the R.I.B.A., remarked on the great change that had come over building since the Institute was founded. He thought that the technical control of building was more efficient now than it had ever been although it was becoming more complicated. In order to deal with this complexity he felt that private architects should work in larger groups thus allowing more scope for specialization. Conversely he suggested that the offices of public architects tended to be unwieldy and might well be sub-divided. The art of design had lagged behind technical development, but during the last ten years there had been real progress. Nowhere was this more evident than in the Hertfordshire Schools for which Mr. Aslin was responsible.

The President of the R.I.B.A. confided that this was the first dinner of an Allied Society which he had attended since he took office. In a charming and witty speech he was occasionally serious. Some method should be found of preserving the remains of the Roman Temple in the City of London, if necessary at public expense. Since the war, building investment had been lop-sided because by far the greater part of it was for public authorities. This would not always be so, and it was essential for the good of the profession that private architects should have a fair share of the work. The Art of Architecture was the first charge of the R.I.B.A. and if they looked after that they would be serving the best interests of the nation and of all their members.

Mr. R. W. Cave, Chairman of the Oxfordshire Society of Architects, and Head of the Oxford School of Architecture, proposed the health of the guests. There were many distinguished people present including the Mayor and Mayoress of Oxford, the President of St. John's College, the President of Magdalen College, and representatives of building and the allied professions. Mr. Colvin, Fellow of St. John's College, was also present and there were many complimentary references during the evening to his recently published Biographical Dictionary of English Architects, 1660-1840.

There were two replies to this toast. His worship the Mayor chose, as he said, to speak for the Fair Sex and that left the President of Magdalen to speak for the Sterner Sex. The latter reflected on the Art and Architecture of the past. It was only recently that people had become keenly aware of the past and it was now necessary to study history in order to appreciate the things of today. Where architecture was concerned he felt that this could be overdone. The "past" was continually growing and some discrimination had to be used because much of what was old was by no means good. Undue reverence for the past could have a stultifying effect on modern architecture. These sentiments were greeted with hearty applause.

Mr. Macmillan on Heating Appliances

Opening the Coal Utilization Council's new display of modern heating appliances at the Building Centre, Store Street, London, last Thursday, Mr. Harold Macmillan, Minister of Housing and Local Government, said:

"I am here to-day not merely as an advocate of economical modern heating systems which will save coal and prevent smog, but because efficient grates and stoves are an important feature of the improvement and conversion of older property.

"As you know, we have launched a nation-wide campaign to save our well-built old houses from deteriorating beyond redemption. There are thousands of them all over the country, there are indeed thousands of them here in London, which need the life-line we are throwing out to them.

"We ask owners of older property to accept the generous grants—not loans but gifts of money—which are offered in order to bring such houses up to the standards which everybody consider necessary to-day. Thousands of them need bathrooms and modern kitchens, and the advantages of water heating and efficient space heating.

"I have been considerably impressed by the interest which the L.C.C. and other local authorities have shown in the Oxford Street demonstration of improved and converted houses, which has just closed after being visited by over a quarter of a million people in three months.

"And, let us face it, although our main appeal is to the house owners, urging them to accept these grants, it is the local authorities in the long run who will make or mar this campaign. I heard only yesterday of an owner of houses in London which are worth improvement, but who hesitated for two reasons. He said, 'I am not going to tackle this if it means months of form-filling for me, followed by local authority delay; and, anyway, they are sure to fix a maximum rent which rules out my spending any money at all on the house.'"

The Act says, in effect, that if a house is given a new lease of life, and if the tenants get the benefit of modern instead of antiquated living conditions then the Council will fix a maximum fair rent—fair to the owner and fair to the tenant.

I am grateful to all the local authorities, and especially those in London, who are already getting on with this vital job. I often think as I go through this city that London conceals a burden of domestic misery behind many a well-built façade.

"Let us give Older London a new lease of life. London needs these houses. It has a bigger demand for homes than any other town or city in the country. We cannot afford to see them decay. I call on London to give us an example and a lead to the whole country. We are going to tear down the slums. Let us at the same time preserve the well-built older houses. Prevention is better than cure.

"The Coal Utilization Council is doing a first-rate job in popularizing advanced techniques in domestic heating. Anyone who comes to a display like this can see some of the appliances which modern research and development have made available not only to our new houses but to our older houses; and I commend them to the public because of their economical use of our precious fuel, because they minimize smoke and help to prevent smog, and because they offer the housewife, and the home, comfort with economy."

Private Architects' Society Formed at Stoke-on-Trent

In accordance with the policy of the Institute of Registered Architects to encourage the formation of groups or societies of members for the furtherance of their particular interests, the Stoke-on-Trent and District Society of Private Practising Architects was formed in July last.

The aim of the Stoke Society is to safeguard and promote the interests of architecture and in particular those of the private practitioner. The co-operation of similar societies within the Institute will be welcomed.

Members, being principals in private practice, interested in the formation of a society or group in their district are invited to communicate with the Secretary of the Institute of Registered Architects, at 47, Victoria Street, London, S.W.1, who will be happy to give them all possible assistance.

There can be no doubt that present-day developments tend to the creation of conditions which call for a very real unity among private architects to protect their position.

L.C.C. Brixton School of Building—Jubilee Celebrations

The close ties of the Brixton School of Building with building activity all over the world are revealed by the ready response of hundreds of the School's former students to the announcement of the Jubilee celebrations to mark the 50th anniversary of the opening of the School in 1904. Added to this, the readiness of all sections of the building industry and allied professions to be associated with the arrangements ensures that the Jubilee will be not only an important event

in the history of the college but also a landmark in the development of technical education for the building industry.

High spots of the celebrations will be an exhibition "Fifty Years of Building Education," to be opened by Sir David Eccles, K.C.V.O., M.P., Minister of Works, at the Building Centre on November 11, 1954; the annual prize-giving at County Hall on November 24, 1954, when the Rt. Hon. Herbert Morrison, C.H., M.P., will distribute the prizes; the publication of an illustrated booklet recounting the history of the school (ready in late October); and a School of Building Association dinner at the Grocers' Hall, E.C.2, on November 12, 1954, at which the chairman of the London County Council (Mr. Victor Mishcon) will preside. The support given to the dinner by building and professional bodies as well as past students has been particularly gratifying since an important objective of the celebrations is to extend the influence of the School of Building Association as an active force for the furtherance of the interests of the College and of technical advance in building.

The Principal (Mr. D. A. G. Reid, B.Sc. (Eng.)) hopes that these arrangements will enable all persons interested in the work of the college to participate in one of these events and anyone interested is asked to communicate with him at the L.C.C. Brixton School of Building, Ferndale Road, S.W.4.

British Empire Medals Presentation

Acting on behalf of the Queen, the Minister of Housing and Local Government, Mr. Harold Macmillan, presented three British Empire Medals at a ceremony at the Ministry in Whitehall last Monday. All the awards which were announced in the Queen's Birthday Honours List, were made in recognition of long service and exemplary devotion to duty.

The recipients were:—

Mr. George Henderson, Engineering Clerk of Works, Newcastle and Gateshead Water Company. He became foreman of the maintenance gang and under his guidance the gang developed into a civil engineering organization which the Company now use to carry out by direct labour methods all but very exceptional civil engineering work.

Mr. Newark Robson Sainthouse, General Foreman, John Laing & Son, Ltd. He has been with Messrs. Laing for 26 years and has travelled extensively for them from contract to contract. He has supervised the erection of the Ministry of Housing and Local Government's demonstration houses at Olympia, in Holles Street, London, and at Birmingham.

Mr. Frederick Johnson, nr. Winchester, Hants, Pumping Superintendent, Southampton Corporation Waterworks. He rendered particularly valuable service during the war when Southampton's water system was constantly being damaged by enemy action.

L.M.B.A. Luncheon to the Lord Mayor

At the luncheon at the Savoy, last week, which was attended by three Ministers of the Crown, the President of the L.M.B.A., Mr. R. S. Williams, made a graceful speech of welcome to Sir Noel Bowater, and recalled the ties between the L.M.B.A. and the City of London, of which many of the Association's members are Freemen. Mr. Williams said that the industry was adapting itself to the use of new materials, processes and techniques, and to mechanization wherever possible, all for the purpose of building better, more safely, quicker and more economically.

The Lord Mayor paid a tribute to all who had taken part in the rebuilding of Guildhall and expressed his appreciation for the assistance and co-operation of Sir David Eccles and Mr. Harold Macmillan in the City rebuilding. He suggested that builders should floodlight their cranes and other construction along the route taken by those attending the Lord Mayor's Banquet, on November 9. Sir Walter Monckton, Minister of Labour, moved a vote of thanks to the Lord Mayor.

The L.M.B.A. has circularized its members urging them to adopt the Lord Mayor's suggestion for floodlighting their sites.

R.I.B.A. Library Group Meeting

The next meeting of the Library Group will take place on Tuesday, October 12, at 6 p.m., at the Royal Institute of British Architects, 66, Portland Place, W.1.

Mr. Charles Waite, who has repaired and rebound several valuable books owned by the Royal Institute, will speak about his work, with special reference to the problems of the R.I.B.A. Library.

Leeds School of Architecture —Old Students' Association

A reunion will be held at the Great Northern Hotel (First Floor) on Saturday, November 27, 1954. Will old students please get in touch with A. V. Montague, Dipl.Arch.(Leeds), A.R.I.B.A., Bank Buildings, Hyde Park, Leeds, 6.

Presentation of L.M.B.A. Medals

Sir Walter Monckton, Minister of Labour, is to attend the presentation of L.M.B.A. Apprentices' Medals by Marshal of the Royal Air Force Lord Tedder, in Drapers' Hall, on Friday, October 29. The Lord Mayor is to preside.

Mr. E. L. Jones, Secretary of the London Branch of the National Federation of Building Trades Operatives, is to present the prizes awarded by the L.M.B.A.'s North-Eastern Area for the best apprentices in their district at a dinner at Ilford, on Tuesday, October 26. Mr. L. F. Chamberlain, Chairman of the Area, is to preside, and Mr. S. J. Clapp, Chairman of the West Essex Chapter of Architects, will be among the speakers.

The prize-winners are all apprentices indentured under the National Joint Apprenticeship Scheme for the building industry.

Heriot-Watt College, Edinburgh

Two-year Course in General Foremanship Studies

The first Scottish full Certificate Course in General Foremanship Studies following the recommendations and syllabuses of the Standing Committee for the Training of General Foremen in the Building Industry was formally opened at the Heriot-Watt College, Edinburgh, by Mr. Robert Smith, of Edinburgh. Mr. Smith is the Scottish National Federation representative on the Standing Committee.

The Course will extend over two evening sessions and will meet twice weekly. Mr. N. C. Sidwell, M.Sc., Head of the Department of Building, in co-operation with Mr. J. Gloag, B.Com., Head of Commerce Department, have organized a panel of course lecturers composed of general foremen, site agents, contractors, quantity surveyors and other specialists.

Lectures will be given on Site Administration and Control, Site Organization and Method, Personnel Administration and Surveying Practice. A period for discussion will be set aside after all lectures.

Staff Changes at C.o.I.D.

Mr. Paul Reilly, who has been Chief Information Officer of the Council of Industrial Design since April, 1948, has been appointed Deputy Director in charge of the Industrial Division. His responsibilities will include the Council's relations with industry, its exhibition programmes, the promotion of "Design Review" and of the Record of Designers, through which manufacturers in search of qualified designers are put in touch with suitable candidates.

Mr. Reilly will be succeeded in the Information Division by Mr. J. Noel White, who has for the past six years been Information Officer of the Rural Industries Bureau. His responsibilities will include Public and Press Relations, the approach to the Retail Trade and to educationists, and all publications including the Council's magazine *Design*.

Mr. Morris Brown, who was formerly on the editorial staff of the London *Evening Standard*, has been appointed Press Officer to the Council in place of Mrs. M-J. Lancaster, who has resigned to take up magazine editorial work. Miss Joyce Blow will continue as Assistant Press Officer.

CORRECTION

In the article on Kidbrooke School, September 16 issue, the Armstrong Cork Company was credited with being the manufacturers of "Accotile Cork Flooring." Actually, of course, Accotile is a thermoplastic tile floor.

A HUNDRED YEARS AND AFTER: 1

BY DEREK PLUMSTEAD, A.R.I.B.A., A.M.T.P.I.

IT is a far cry from the first Public Health Act of 1848, which limited the proximity of buildings to one another, to the present-day control over the design of buildings and their environment. Yet it was an inevitable sequel as the progressive control of succeeding public health and town planning Acts show. Once the principle of controlling the heights and spaces about buildings was accepted, the design of both buildings and their environment was immediately influenced. Moreover, as the wasteful and conflicting uses of land became more apparent during the growth of development over this same period, a means had to be evolved to ensure proper uses and relationship of uses of land. This further control completed the circle of influence upon architectural design, not only of the building envelope and its immediate surroundings but of the pattern of town and country.

Whether we like it or not, this control has probably come to stay, as it represents a gradual growth in a general concern for one's environment and is a reflection of social and scientific thought of our era which has achieved an appreciation for more airy and sanitary conditions of living and of unlimited distances for communication.

It was a misfortune that architecture during this period of gradual growth was initiative instead of representative of the demands of our age. It not only divorced the conceptions of space within a building from its elevations, but buildings themselves came to be regarded as independent units almost entirely neglecting their outside formation in the street picture. That neglect was entirely contrary to the inter-relationship of the planned uses of land in a locality. After all, there is as much need for consideration of the architectural ensemble of the street or square as there is for the affiliation between uses of land—as between houses, roads, schools and recreation spaces and the architectural form they create when composed together as one unit.

When ignored, schemes fall into the same criticism as a building forced to fit an elevation, or vice versa. A well-designed building evolves from a fusion between the arrangement of internal accommodation, constructional technique, and the external appearance expressing the way of life. It is no less so in the art and science of town and country development where this fusion exists at the outset of consideration of "zoning" the proposed uses of land. Town and country development as an architectural conception does not follow after the process of zoning has been done; it evolves with it.

That process of evolution can be interrupted with dire results when the author of a town plan has no part in its realization unless his successor is of the same philosophy. Otherwise, buildings are erected bearing no relation to the form originally conceived in the zoning plan; or the detailed design of an important road and its flanking buildings spoils the original conception partially followed. Contrary to the Advisory Plan, zones for residential precinct communities were violated by major highways and the retained railway system in central Hull; similarly, industrial buildings, incongruous in character and scale to a residential development are often permitted, contrary to the original conception, and so on. Many advisory plans for cities prepared at the end of the war failed,

Aerial view of City Centre, Plymouth, 1953.

not because they were too far-reaching, but largely because continuity of conception was not maintained.

City Centre, Plymouth

Plymouth's city centre plan of 1943 was an example of the complete fusion of ideas between the type of development required to meet social and economic needs and the composition of building masses, roads and open spaces having considerable regard to the magnificent setting of seascape and inland scenery. Certain social and economic desiderata determined its location in the valley between two hills and on their slopes—that is, between the Hoe and that above North Road railway station. It had to be there because it was the social mecca of the inhabitants and holiday makers. Economically it was closely related to the two harbours of Sutton and Stonehouse. Economic and social reasons also determined the size of the component parts—the building masses and open spaces. Their shapes and disposition, however, which formed the pattern, had, of course, and at the same time, to be composed as a broad outline picture with salient features marking the most important parts of the new city centre, such as the places of public congregation. The broad picture of general massing gave ample scope for many interpretations in detail of this spatial design.

The physical nature of this part of Plymouth—the sloping floor of the valley and flanking slopes offered such opportunities. The surrounding hills, headlands and sea provided a magnificent setting to enhance the scheme. From many different vantage points this could be appreciated, and the north to south boulevard made the most of them as well as providing a convenient link between the component parts. It was not a vista along a flat, uninteresting plain, but a promenade linking together the building masses, streets and squares, all set against a continuously changing background of colour and texture of superb panoramic seascape and inland scenery. For all the criticisms of vista mongering, to throw away such an opportunity would have provided better reasons for criticism.

The diagram of precint units tucked somewhat insignificantly into a corner of the published plan shows the broad outline of the scheme with its component parts distributed so as to give each an adequate position on the land where its elements can form a layout suitable for their function and, according to their importance, to form focal points with their silhouettes punctuating the general pattern of the whole scheme. The road system then threads its way around or through the component parts according to the kind of access required and itself adding to the general pattern of development.

City of Plymouth, New Civic Centre (reproduced from "A Plan for Plymouth, 1943"). The line sketch below shows the precinct diagram enlarged.

This fusion, as represented by this diagram between the plan form and elevation, is expressed in the coloured picture plan itself in more detail. It gives an idea of the sort of detailed layout which the diagram offered among many possible alternatives or variants.

The process of illustrating these conceptions in spatial design must, however, be followed by details as to the architectural treatment of the streets and squares themselves as a guide for administrative control under the 1947 Town & Country Planning Act. Unfortunately, and despite the fact that control over the use and spacing of buildings influences architec-

tural conceptions of space, control over the external appearance of buildings and their surroundings came as a source of some surprise and no little chagrin to many. Perhaps such control was never intended for according to Sir Patrick Abercrombie it got into the 1947 Act by accident and the Minister had to be assured by a barrister that there was power in the Act to do so!

The fusion of the plan form and its elevation as an essential and inherent part of development was not generally acceptable in 1948. Nor is it wholly acceptable to-day for only in a few instances have there been large-scale developments such as the New Towns, Lansbury, Canterbury and the City of London where art and science have been appreciated in this combined sense.

Many local planning authorities have been concerned more with the qualities of individual buildings rather than with their design as component parts of the ultimate and broader picture of the street which they and subsequent buildings will create. It is interesting to note that one County Council found it necessary to suggest amendments to the elevations of 208 applications in one year out of a total of 3,159. Amicable agreement was reached in 182 out of the 208. But important as this form of control is in raising the general standard of design of individual buildings to make them more shapely there still remains the very important need to make them a fitting contribution to their environment. Central area rebuilding requires the overall scheme for detailing the component parts of the master plan to indicate the groupings of buildings and where the points of architectural emphasis should be.

The Example of Canterbury

The rebuilding of Canterbury is an example of such street designing and with the assistance of architectural control interesting studies in street composition are now being realized. It was one of the first attempts and its success in an era generally lacking in architectural good taste and smothered in materialist aims is therefore more remarkable as the photos show. Though we seem to be emerging from an age of copyism this historic centre of Canterbury stood in danger of this evil influence. Fortunately Mr. Hugh Wilson, the City Architect and Planning Officer, obtained, through the support of the Royal Fine Art Commission permission to encourage a truly modern conception of building design. One can well imagine the half timber nonsense and the repetitive honours of some of the "chain" shops that would have resulted but for this courageous decision.

In any case good street design requires more than just good taste. It requires the architectural co-ordination of many separate schemes normally prepared independently of one another and, in the non-blitzed areas, often with many years apart in time. Architects know well, especially those with long years of experience, that time has a habit of demanding a change in a client's requirements which original conceptions will not satisfy. Modifications and often complete recasting have had to be done. This is a risk one has to take and does not invalidate the need to plan or design ahead of the present time. Just as the architect, as of old, wisely sketches in outline the future completion of the building he now designs and builds only a part, so the architect-planner lightly suggests the whole street design and details only those sections where agreement has been reached with the developer for immediate building operations.

The problem of architectural control is admittedly a difficult one especially as there is no prevalent architectural style with guiding formulæ to give easy coherence and common understanding: modern conceptions are philosophic rather than formal. Even so, it is possible to achieve coherence with a reasonable degree of freedom for the individual designer by means of an overall scheme for the street picture.

Such coherence need not necessarily lead only to a form of "art pompier" which Sir Patrick Abercrombie has mentioned. It can be punctuated by buildings of outstanding merit and inspiration as in the rebuilding of Dubrovnik in the 18th century under Venetian influence.

Control does not necessarily stifle inspired work as indeed it did not in the case of Mr. Paine's design for Greig's shop in George Street Canterbury. Everything depends upon whether the individual designer and the co-ordinating architect-planner speak the same language. There seems to be more difficulty experienced from certain types of architects—the "ivory tower"* architect ". . . who seeks only seclusion . . ." and "the prima donna who must dominate the stage and refuses to share a dressing room"—than from development companies who are found to be very co-operative in Canterbury.

While some loss of liveliness and even of character may occur where there is a lack of common understanding between the controlling architect-planner and the individual architect, those results can be an asset rather than otherwise since they serve as a foil to set off the gems where there is common understanding.

The aim of the overall plan is therefore an affiliation between individual buildings in an architectural ensemble of good neighbourliness. If the development is rebuilding of a large blitzed or other cleared area and is

George Street, Canterbury. The extra height of the farthest new block breaks the level of the group skyline and lessens the climax of the church tower in the distance.

* From Sir Patrick Abercrombie's lecture on "Discipline in Civic Design" to a Summer School of the Town Planning Institute.

rapid, it should be truly representative of the present era and not bogus representations of past eras. There can be variety and interest in such large-scale schemes, even when expressive of only one social order.

If it is smaller rebuilding schemes within an existing pattern, however good or bad, the same boldness of design as representative of our age will contribute to a broad variety of styles, materials, proportions, mass effects and scales as are to be found in past examples so much admired to-day.

Our age contains a rapid development in the fields of the sciences and machine production. These have revolutionized building technique and changed the mode of life not only within the buildings in which we live and work but without. A sanitary emphasis in our way of life has created an interest in clean, machine-cut lines and of the motor vehicle. A new social order has developed over the last 200 years into a more even distribution of wealth and has, with the great increases of population, made this new interest more widespread.

We strive towards openness and airier conditions in our conception of the use of space as opposed to the intimate enclosure of limited space conception of the medieval peoples. We admire the charm of their developments but few would like to live in them. Hence our garden cities are truly representative of our time as indeed also are the broader space standards for city rebuilding. We need as much protection from the motor vehicle, not only from being run-over but from noise, as did the medieval peoples from invading forces. The fortified town wall has its counterpart in the bypass highway. Hence the precinct principle is also "of our time." There is a need for segregating traffic according to its purpose and destination and of designing some roads differently from others which has a salutary effect upon the character of development and therefore of our environment. This need is an essential feature of our precinct principle which has its origins in medieval times but now has a new meaning. The North-South boulevard in the Plymouth Plan is an example of this new meaning.

"Control does not necessarily stifle inspired work as indeed it did not in the case of Mr. Paine's design for Greig's shop in George Street, Canterbury".

Unfortunately, interest in architecture and particularly this outside relationship of space about buildings has lapsed for a hundred years or more, no doubt owing to the magnetic attractions of scientific and machine inventions. It is particularly unfortunate that this lapse in interest should have occurred over a period of great changes of civic development. Even to-day, the tiled bathroom and kitchen unit or "frig." is of more interest than the external appearance of the house so long as it satisfies a nostalgia for the romantic past. The fact that the object of that nostalgia bears no relation to the kitchen unit or tiled bathroom conception of modern times seems not to occur to the majority or indeed, to attract much interest.

Nevertheless, there are encouraging signs of a revival of interest in contemporary design and so it must, in view of the vast improvements pending in rebuilding schemes. Post-war council housing, schools and the South Bank Festival of Britain scheme have given much food for thought. But there is still little enough emphasis even among architects upon this outside relationship of space, and structures still tend to be regarded as independent units without a part in the street picture.

With a greater relaxation of building licences there exists both a danger of all the bad old stuff returning—"the fat and familiar, mediocre and characterless neo-Georgian" being reproduced in the City of London and the mock Tudor in suburbia—and an opportunity to avoid it.

The opportunity lies, in the first instance, in the hand of the Local Planning Authorities and the Ministry of Housing and Local Government on appeal. For the "street picture" conception can, in these days, only be decided by those authorities in whose hands the 1947 Act has placed the power to co-ordinate architecture. In bygone eras it, of course, lay only in the hands of enlightened landowners, who were interested as much in the appearance of their estates as in their material values. It is not, I think, an exaggeration to say that this transfer of power has not brought a comparable interest in the appearance of buildings, the qualities of which have often been stated recently as a mere matter of opinion. Interest in and therefore the use of their powers is largely applied to questions of land use than with architecture. This is in fact due to the power coming upon an unprepared authority and ill-advised attempts were at first made which brought this form of control into ill repute.

Some have consulted part-time advisory panels of architects who are not paid for the work they do which again reflects the lack of importance attached to the service sought. Only a very small number of authorities have made a real attempt, even when their planning officer was also their architect, to conceive any sort of future picture for their streets and squares and so release the latent art of their plans in a creditable manner. So once again the history of town and country development is repeating a depressing result as great and lasting changes take place in the rebuilding of blitzed centres and suburbia where expansion once again gets into its enormous stride. One of the few exceptions is Canterbury as explained. Another may yet be the most important exception as she is our capital city—the City of London.

There by comparison with the provincial cities, rebuilding has lagged owing to the expensive nature of development required in a time of licence restriction. All the greater therefore is the opportunity to do what other cities are failing to do in giving expression to this fusion of the art and science of town development and be truly contemporary with our time.

There is history to be made in this new form of approach to development by co-operation because in the past large-scale development has either been done only by one individual sponsored by an enlightened landowner as in the renaissance era or by the collective results of many individuals spread over centuries as in medieval times.

We, in our time, have yet to learn how to achieve as good results when the tempo of building has so increased by advances in building technique that only a comparatively few years are needed for even more extensive developments. The patina of time is no longer our ally as in medieval times except to mellow the materials we use if they are the right ones. Our ally is the product of our age—teamwork.

Only through that medium can the conditions of the physical environment be moulded in accordance with the sets of standards which the planner has compiled from modern knowledge of social habit and economic opportunity. To-day, they are the provision of light and air, of openness and recreation, of traffic and safety. They are also of the community services. Together, they are the symbols of our way of life and should be reflected in the designs for the home, place of work and the communication system.

THE LAW OF BUILDING CONTRACTS

II. Entire Contracts

BY GILES BEST

THE vast majority of contracts between builders and their employers are of the sort classified in law as "entire" contracts. That is to say they are contracts in which the agreement is for a definite job of work to be done and payment is not due until the job is complete, as opposed to contracts in which the builder is to be paid on a time or measurement basis irrespective of whether the job is completed. The employer agrees with the builder that he will pay him so much for building a house. If the contract is an entire contract the builder is entitled to no payment if he abandons the work half way and will be liable in damages for breach of contract. Of course, if the abandonment of the work is at the request of the owner, or as the result of circumstances which were anticipated in the making of the contract and provided for in its terms, the builder may be entitled to compensation for the work which he has done. The distinction between "entire" contracts and other contracts is therefore of great importance to builder and employer alike.

The question whether a contract is or is not "entire" can only be answered by reference to the terms of the contract itself. Unless there is an express provision in the contract to the contrary an agreement to erect a particular building is presumed to be an entire contract. An agreement to do repairs is not, unless it can be construed as an agreement to do a complete job or a series of complete jobs. In the latter case, of course, the right to payment in respect of each job accrues as the job is completed and if the work is abandoned the builder is entitled to payment for the jobs he has finished. The method by which the price of building works is to be computed has some relevance in determining whether or not a contract is entire. If the agreement is to build a complete structure or to do a certain job the contract is entire whatever the method of payment. Even if payment is to be calculated on a schedule of prices or on a basis of cost of works plus profit, if it is to be a price for the whole job then the contract is entire. So also is a contract where no price is mentioned beforehand but it is impliedly agreed that it shall be based on fair and reasonable charges. Perhaps the most conclusive example of an entire contract is the kind shown as the "lump sum" contract. This is the contract which arises when a builder agrees to do a fixed job for a predetermined price such as to build a house for £2,000. In this case not only is the price not due until the work is completed but the price cannot be increased by the addition of extras unless the employer has expressly authorized them.

It is, of course, in the employer's interests to ensure that any building contract is an entire contract, in order to avoid the possibility of work being abandoned when incomplete. On the other hand builders are usually unwilling to enter into any but the smallest contracts without some provision being made for interim payments before the work is completed. If payments of this sort are agreed upon this fact may rebut any suggestion that a contract is entire, particularly if it appears that the work is divisible into so many different units each of which is to be paid for on completion. The safest compromise is that which is adopted in all the standard forms of building contracts, namely the making of interim payments as certain stages are passed in the completion of the works, with a proviso that payment, or the issue of a progress certificate as a preliminary to payment, is not to be taken as approval of work done up to the time of payment.

It is in fact usual for a contract to provide that a progress certificate shall show the value of the work done so far and that a proportion only of the sum arrived at shall be paid to the builder. The employer thus retains in his hands a sum which will operate as an insurance against any defect in the work included in the progress certificate. The contract remains an entire contract and the builder is not entitled to demand payment in full until the work is completed and a final certificate issued by the employer's architect.

Thus in Clause 24 of the R.I.B.A. Standard form of building contract the earlier subclauses deal with interim payments but subclauses (f) and (g) provide that only the final certificate of the architect shall be conclusive evidence that any part of the works has been completed in accordance with the contract. Clause 19 provides that if the contractor fails in his obligation to complete the works and the employer determines the contract, the contractor shall not be entitled to any payment in respect of the contract until the works have been completed by the builder who has been called in to replace him. When this has happened the contractor is to be paid the original price less the sum paid to the substitute who completed the work, but if the sum paid to the substitute exceeds the original price the contractor is to pay the employer the amount of the excess. Provisions to the same effect are to be found in Clause 46 of the C.C.C./

Wks/1 General Conditions of Government Contracts for Building & Engineering Works and Clause 25 of the L.C.C. form of Building Contract.

In contracts which do not provide in terms for the issue of a final certificate the date at which the employer becomes liable to pay the full contract price is the date of the effective completion of the works.

The fact that building works must be completed to the satisfaction of the employer or his architect does not give the employer the right to demand without a previous express agreement an unusually high standard of performance. If this were not so he might be able to postpone indefinitely the date of his liability to pay. He is entitled to expect a standard of work that would be regarded as reasonable by competent men of experience in the particular type of work. The employer cannot claim to reject the ship for want of a ha'porth of tar or the house for want of a pane of glass. This, of course, does not mean that a builder can claim to have fulfilled his obligations if he completes a job which, while of equal value to the job he contracted to do, is nevertheless not in compliance with the specifications. A useful illustration is provided by a recent case* in which an interior decorator undertook to decorate and furnish a flat for an agreed sum, the basis of payment being "net cash as the work proceeds and balance on completion." The employer paid half of the agreed sum by instalments and occupied the flat and used the furniture, but refused to pay the balance on the ground that the workmanship was defective. In fact the workmanship was defective, but the cost of making good the defects was only a small fraction of the total price. The Court of Appeal held that under the circumstances all that was required of the builder was that he should substantially complete the work specified, though it was careful to emphasize that in cases where there was a retention fund the builder would be bound to correct defects before he was entitled to demand the balance of the retention fund. In this case the cost of making good the defects was small and justice would be done by deducting this sum from the total price. The court's decision was influenced by the fact that the employer had chosen, despite the defects, to enjoy the benefits of the work which had been done and he must be taken to have approved the substance of the work.

In fact completion means compliance with the employer's instructions and if these are carried out the employer must pay the agreed price. It might happen that building works when completed are found not to fulfil the purpose which the employer originally had in mind. The test of completion in such a case is what instructions were given to the builder. If an employer instructs a builder to construct works to answer a particular purpose, and the builder agrees, then he is not entitled to payment until he has carried out his instructions and completed works which answer the purpose. On the other hand if a builder is given specifications to follow and executes the work specified, then he is entitled to payment even though the work which he has done is useless for the purpose which the employer had in mind. It is only where, as in the former case, the builder warrants that the works he will execute will fulfil the employer's purpose that he can be held liable for their failure. The test, as in all matters of contract, is the terms on which the parties agreed.

* *Hoenig v. Isaacs* [1952] 2 *AER* 176

CELLULOSE PASTE

The wallpaper hanger, whether professional or amateur, need no longer trust to luck in preventing marks or unsightly joins appearing in the finished job. Cellulose paste is now available on the market and has many advantages over starch paste. Polycell, a British production, is a fraction of the size and weight of starch paste and the product combines the qualities of a fool-proof size and a non-staining wallpaper adhesive.

Polycell, evolved in conjunction with one of Britain's leading wallpaper manufacturers, is clean, easy to use, dissolves quickly in cold water. Its two-ounce pack makes between one and one and a half gallons of paste according to the type of wallpaper to be used.

Most wallpapers have a matt, non-reflective surface which, when coated with a thick film of starch paste, becomes glazed, and reflects light, making stains obvious. In joins, no matter how careful the application, a thin line of starch paste is squeezed to the surface and is all too apparent. Polycell application avoids these blemishes.

Cellulose paste has the property of adjusting itself to atmospheric conditions, expanding and contracting with the paper, and never peeling or curling. It thus has especially valuable properties for kitchens and bathrooms.

For stripping wallpaper, a tablespoon of Polycell in a half-gallon of water will speed the job, prevent splashing and allow the water to percolate well into the paper.

This cellulose paste is the perfect size to use before painting, distempering or wallpapering, for it is impossible either to oversize with it or for the paint to flake, so the makers claim.

DURABILITY OF ALUMINIUM

This rail-loading bay, of Petrochemicals, Ltd., is an aluminium structure designed to house pipe-line terminal equipment for loading rail tankers with various liquid products from nearby storage tanks. The structure is of sections to B.S.1476:HE10WP and the curved roof in NS3 corrugated sheet. Installed in 1947, it was inspected in 1952 and again in January, 1954.

The condition of sections and sheet had altered very little between the two inspections, further evidence that 80-90 per cent of the little corrosion that is going to take place occurs during the first 2-3 years and thereafter is only slight. The sections were covered with a coarse granular deposit which could be removed with wire wool to reveal the bright metal beneath. The sheet was uniformly covered, on the underside, with a very much finer granular deposit which again could be removed with wire wool to show only slight pitting, and on the outside was quite smooth beneath a black coating of atmospheric dirt.

Polycell demonstrated

MULTI-STOREY FLATS WITH CLIMBING SHUTTERING

The Hochhaus, Habichtsplatz, Hamburg

BY H. G. COOPER

THE Hochhaus, in Habichtsplatz, Hamburg, is a 14-storey block of flats with basement. It was designed by Herr Richard Knerlick, Dipl. Ing., an architect employed by the Neue Heimat Co-operative Housing Society of Hamburg. The work was carried out by specialist contractors—Allgemeine Hoch-und Ingenieurbau A.G.—in reinforced concrete using a climbing type of formwork. The site was visited and the work discussed with the designers and contractors by the author earlier this year.

General Decription

The building contains 118 one-room and 10 two-room flats. The one-room flats consist of a bed-sittingroom with built-in bed and clothes closet, a small kitchen fitted with a cooker, sink and refrigerator, and a small bathroom fitted with a shower, hand-basin and W.C. The two-room flats have a sittingroom and a separate bedroom. A typical floor plan is shown in Fig. 1. The kitchens and bathrooms are artificially lighted and mechanically ventilated. The ventilating fan is mounted in a pent-house on the roof and forces air through ducts which are openable to kitchens and bathrooms. The building is to be centrally heated, but flues have been provided to enable tenants to use their own stoves if desired.

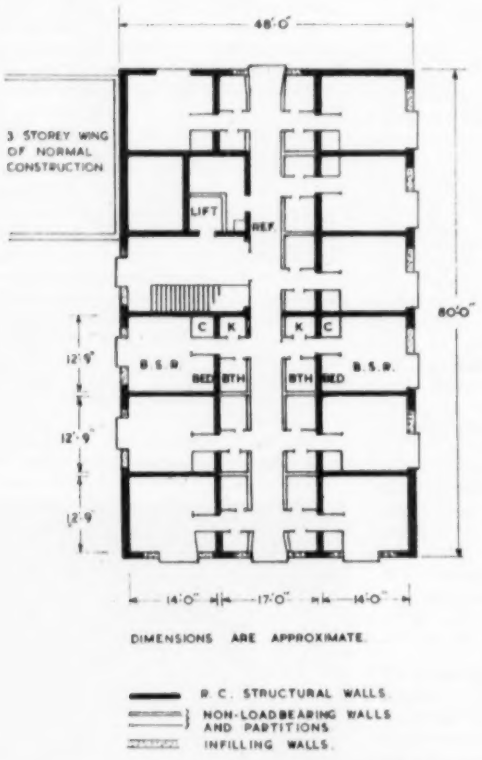


Fig. 1. Plan of the Hochhaus.

The main staircase, which leads on to a central corridor at each floor, is totally enclosed and the flights within the staircase enclosure can be sealed with fireproof doors at alternate floor levels. From the ninth floor to the roof there is an internal emergency staircase. A lift serves all floors and a precast concrete refuse chute adjoining the lift shaft is accessible from the corridors. The designers consider that the standard of equipment in this building is higher than the average in Germany.

The building was originally designed to be built in brick, but a study of alternative methods of construction showed that considerable economic advantages might be gained by building in reinforced concrete cast in climbing shuttering. A comparison made by the designers showed an expected saving in cost of at least 1½ per cent as compared with the cost of brick, reinforced concrete or steel-frame construction. By the climbing shutter method the whole of the load-bearing walls (internal as well as external) were expected to be completed in ten days as compared with seven days *per storey* for other methods. In consequence, total building time was expected to be about twelve weeks less than with normal methods of construction.

A further claim made is a gain in floor area through the reduced thickness of the walls cast with the climbing formwork as compared with normal masonry assuming the external dimensions of the building remain the same. A gain of 10.7 per cent in floor area is claimed and thus represents a further appreciable saving by reducing the cost per unit of usable living space.

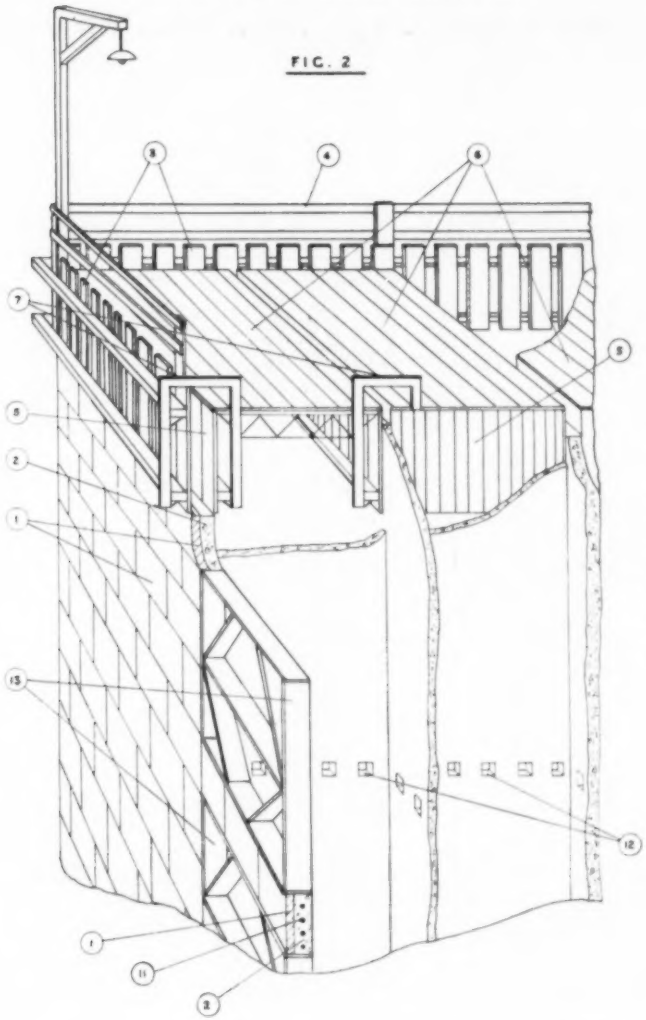
The only apparent planning restrictions imposed by this system of building are related to the necessity for "egg-box" construction and to economic considerations which suggest a minimum height of eight storeys and a maximum height of 20 storeys. The minimum height is consequent upon the necessity of spreading the cost of the climbing shutter equipment over a sufficiently large run, and the maximum height is related to the economic thickness of walls which are, with this form of construction, preferably of uniform thickness. The position of the internal load-bearing walls for dwelling construction was said to be governed not by structural requirements but by such factors as economic floor spans and the space requirements for rooms. The Hochhaus was a simple oblong in overall plan, but this was not an essential requirement of the method employed. In fact, there seems no reason why this system should not be applicable to any plan likely to be used for multi-storey flats, provided the detail planning permits the main walls to continue through all floors.

Method of Building

Building operations started in August, 1953, with the excavation for the cellars and foundations. By September 12 the foundations, cellar, and a section of the ground-floor walls had been built in reinforced concrete by conventional methods, since this part of the structure was designed as an air-raid shelter with the planning and strength requirements different from those of the rest of the superstructure. After this stage the climbing formwork was assembled for the other section of the ground-floor walls.

The climbing formwork (see Figs. 2, 3 and 4) consisted

FIG. 2



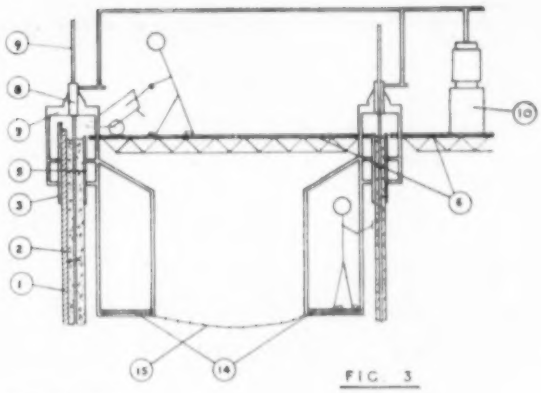


FIG. 3

1. "SIPOBAX" BLOCKS
2. DENSE CONCRETE
3. EXTERNAL SHUTTERS
4. GUARD RAIL
5. INTERNAL SHUTTERS
6. WORKING PLATFORMS
7. CONNECTING YOKES
8. HYDRAULIC CLIMBING JACK
9. CLIMBING TUBE
10. ELECTRICALLY DRIVEN HYDRAULIC PUMP
11. REINFORCEMENT
12. HOLES TO RECEIVE FLOOR
13. WINDOW FORMS
14. LOWER WORKING GANGWAY
15. SAFETY NET

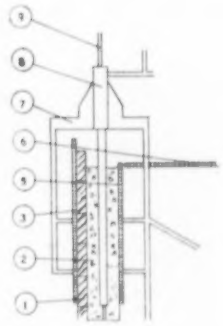


FIG. 4

Figs. 2—4. Working details of the climbing shuttering.

of a number of working platforms each purpose-made to cover the area between the internal walls. Round the edges of these platforms aprons were fixed which served as shutters for the walls. These aprons projected downwards for about 4ft. The platforms were rigidly yoked together in such a manner that there was a space between the platforms of sufficient width to accommodate the thickness of the internal walls. The outer shutter, connected in a similar manner, provided a space to receive the thickness of the external walls. This outer shutter was of the open or skeleton type to support concrete blocks as the outer face and permanent formwork for the poured concrete of the external walls. Working gangways were suspended below the aprons, and these were used for inspection and correction of the wall surfaces (Fig. 3). A safety net was hung between and below the gangways.

The rigid connections between the platforms had Swedish patented climbing jacks (73 in all) attached to them. Climbing tubes, about an inch in diameter, passed through the jacks and extended vertically downwards within the thickness of the wall to the foundations or load-bearing walls below. The jacks gripped the outside of the tubes and when operated by hydraulic pressure climbed up them. Internally threaded extension tubes were added as required, being jointed together with nipples. A sleeve, of sufficient diameter to enable the climbing tube to slide freely within it, was attached to each jack and extended about 4ft down into the concrete. As the jacks climbed, the tubes were thus left free in the concrete.

Concurrently with this work, two lattice-braced scaffold towers (see Fig. 9) were erected to the full final height of the building and guyed together and to the ground with wire ropes. The tower on one side of the building was small in plan and was part of a 15 cwt platform hoist. The larger tower on the other side of the building was a form of temporary staircase, to provide access to the working platform.

Concrete was mixed at ground level in a mixer roughly equivalent to a 21/14. The proportioning was by volume and aggregate was shovelled into a hole in the ground from which it passed by a chute to gauge boxes at a lower level. The gauge boxes were mounted in battery form and centrally pivoted. When one box was filled the battery of boxes was revolved, discharging the measured contents into the hopper of the concrete mixer. The shovel was of the hand-operated drag-line type.

While the concrete was being placed for the foundations, cellar and first floor, a conveyor belt was used for distribu-

Multi-Storey Flats with Climbing Shuttering

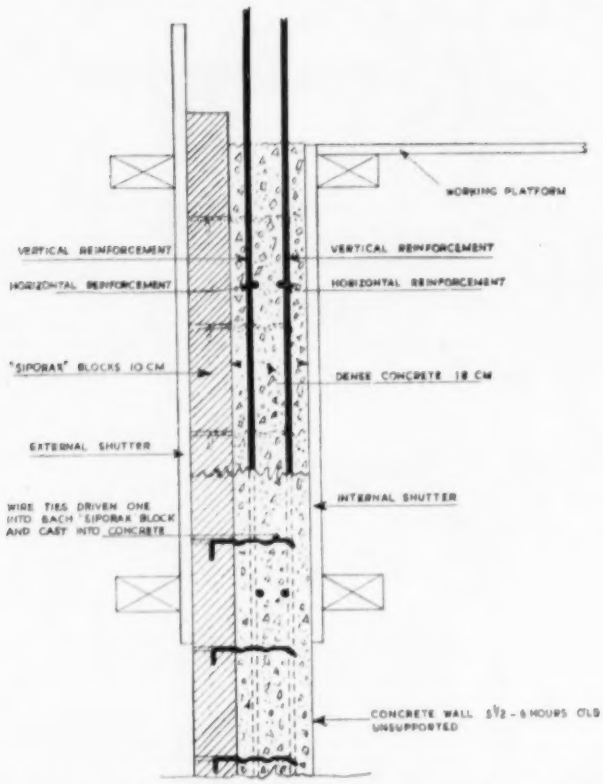

WORKING PLATFORM
VERTICAL REINFORCEMENT
HORIZONTAL REINFORCEMENT
"SIPOREX" BLOCKS 10 CM
DENSE CONCRETE 18 CM
EXTERNAL SHUTTER
INTERNAL SHUTTER
WIRE TIES DRIVEN ONE INTO EACH "SIPOREX BLOCK AND CAST INTO CONCRETE
CONCRETE WALL 5½ - 6 HOURS OLD UNSUPPORTED

Fig. 5a. Typical section through external wall and climbing shuttering.

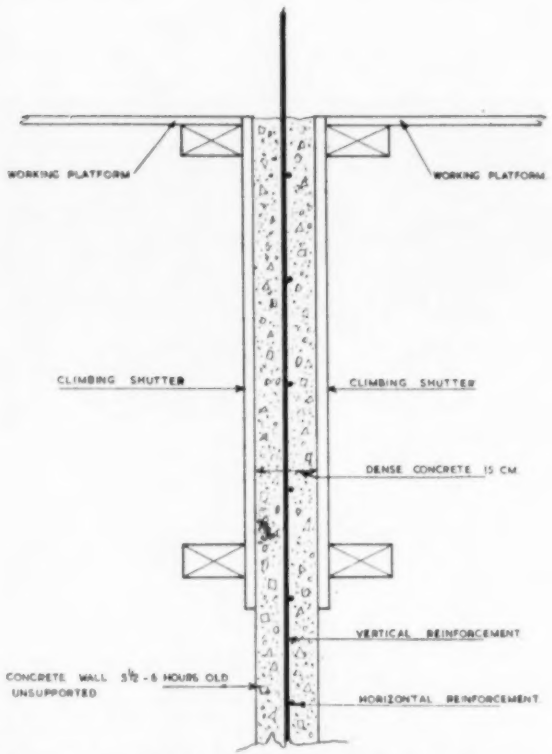


Fig. 5b. Typical section through internal walls and climbing shuttering.

tion. Above this level, concrete was discharged into "pram" type barrows, wheeled on to the hoist, raised to the working platform height, tipped on to the platforms and shovelled into the formwork or tipped direct from the barrows. The concrete was placed in layers about 9-12in deep and consolidated by pencil-type vibrators.

The external walls had an outer skin of "Siporex" concrete blocks (Figure 5a). These blocks were laid dry against the outer skeleton shutters. A spike was driven into the top edge of these blocks and bent through 90 degrees to be bedded in the concrete which was poured between these blocks and the inner shutters. The internal walls were wholly of dense reinforced concrete formed between close-boarded shutters (Fig. 5b).

The climbing jacks, all simultaneously operated by one electrically driven hydraulic pump, raised the shutters 1½-2in every 15 minutes. The work continued day and night for 10 days—from September 21 to September 30. Provision was made for each jack to be boosted by a hand pump in the event of a shutter sticking at any point.

As the work proceeded, auxiliary forms for window and door openings were included in the walls. These forms were wooden frames, anchored in the concrete to prevent them rising with the climbing shutters. There was a clearance of ¼in between these forms and the shutters. Similarly holes, which were later to receive the ends of floor beams, were left in the walls. These holes were formed by metal boxes about 5½in square at 16in centres, laid in the formwork with the concrete and extracted at the lower working gangway level as soon as the climbing shutters had passed.

When the shutter units had climbed the full height of the building, by October 1, they were left in place to provide some weather protection for the subsequent operation of installing the floors.

The floors were of reinforced concrete, poured on wooden decking laid on lattice-braced beams carried on timber struts. These struts were in turn supported on the floor below. The steel reinforcement was placed either in one or in two directions at right angles to one another. The ends of the reinforcing bars were, where necessary, cranked and passed through the holes left in the walls to provide continuity to the floors. The floors were poured 5½in thick in rooms and 6½in thick in corridors and landings. Using rapid-hardening cement, rather more than two floors were poured each week; the work being completed by October 31.

When the climbing shuttering was dismantled and removed, the climbing tubes were extracted where possible; about 75 per cent of these tubes were, in fact, removed. A continuous cradle (Figure 15) was then assembled at the base of the building against the external walls. This cradle was carried on ropes passing over pulleys mounted on outriggers fixed to the roof. As this cradle progressed up the building, panels of brickwork, 15in thick, were built into the concrete framework and the double glazed windows were fixed. When the cradle descends again the "Siporex" blocks are to be skim-coated with a rendering stated to "contain rubber in sufficient quantities to be water-repellent but capable of breathing." At the same time the window frames are to be painted.

While the brickwork was being added, a temporary goods lift was installed in the lift shaft and the penthouse was built in normal reinforced concrete. The roof on the pent-

Fig. 7. September 3, 1953.

Fig. 8. September 12, 1953.

Fig. 9. September 23, 1953.

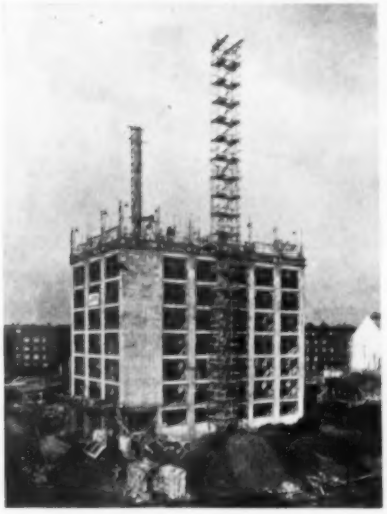


Fig. 10. September 27, 1953.

Fig. 11. September 29, 1953.
9.00 hours.

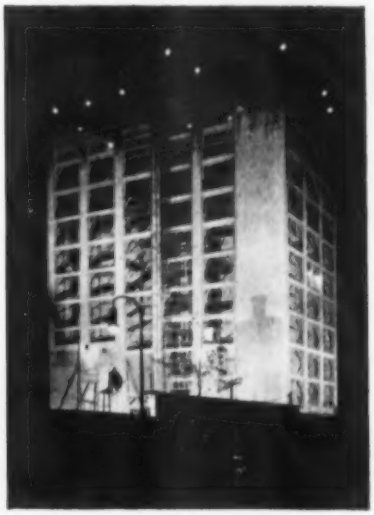


Fig. 12. September 29, 1953.
20.00 hours.

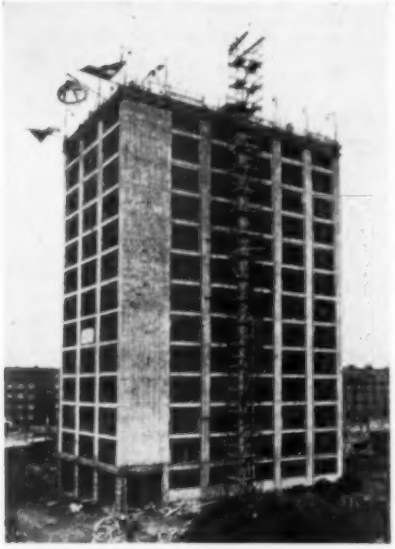


Fig. 13. October 1, 1953
Ready for floor installation

The Hochhaus:
progress photos.

Fig. 14.

house was weathered to the centre and the rain-water pipe passed centrally down through the building. The roof was a reinforced concrete slab cast flat; on this slab and providing the weathering fall and a cavity for insulation, was a layer of "Ytong" concrete panels. These panels were covered with three layers of roofing felt.

Non-loadbearing partitions have been built of hollow clay blocks roughly 5in by 10in and either 2in or 4in thick. All internal wall surfaces are to be plastered.

At the time of the inspection (February, 1954) this was as far as the building had developed, there having been little or no work done since November 22, 1953, because of severe and prolonged frost.

Some indication of the speed of the work is given by the series of photographs in Figures 7-14 while Tables I, II and III give further, more detailed, points of interest in the specification and design.

TABLE I: WALLS

	SPECIFICATION	
	EXTERNAL	INTERNAL
1. Overall thickness	11¾in	7½in
2. Rendering	Skim-coat of water-repellent compound	—
3. Facing blocks	"Siporex," 4in x 10in x 20in	—
4. In situ concrete:		
a Cement	Normal	Normal
b Aggregate	60% 0-¼in; 40% ¼in-1 3/16in	60% 0-¼in; 40% ¼in-1 3/16in
c Crushing strength lb per sq. in	3,550 min., 5,000 max.	3,550 min., 5,000 max.
d Thickness	7in	6in
e Vibrated	Yes	Yes
f Control	Volume batched DIN. 1048, slump tested between 44-46 cm.	Volume batched DIN. 1048, Slump tested between 44-46 cm.
5. Steel:		
a Tensile strength	20,000 lb per sq. in	20,000 lb per sq. in
b Approx. amount	13.5 lb per yd super	13.5 lb per yd super
6. Plastering thickness	⅜in	⅜in

TABLE II: FLOORS

	SPECIFICATION
1. Overall thickness	10in
2. In situ concrete:	
a Cement	Rapid hardening
b Aggregate	60% 0-¼in; 40% ¼in-1 3/16in
c Thickness	For rooms, 5½in; for corridors and landings, 6½in
d Crushing strength lb per sq. in	3,550 min., 5,000 max.
e Vibrated	Yes
f Control	Volume batched, DIN. 1048, Slump tested to 48 cm.
3. Steel:	
a Tensile strength ...	34,000 lb per sq. in
b Approx. amount ...	13.5 lb per yd super
4. Sound insulation:	
a Type	Glass wool
b Thickness	3/16in
c Total value	Equal to a standard of quiet of 14 phons (equivalent to a reduction of 50-52 db for airborne sound and 15-20 db improvement for impact sound—Grade 1).
5. Floor finish:	
a Type	Wood blocks 1½in thick
b Bedding	Hot mastic
6. Ceiling:	
a Material	Lime/sand on reeds on battens
b Thickness	⅜in-¾in

Fig. 15. Continuous cradle which facilitated finishing work to the exterior of the building.

Productivity and Costs

Detailed cost or labour expenditure figures for the various parts of the structure such as walls, floors, etc., were not available nor was it possible to obtain any estimate of the cost of the climbing shuttering.

The contractor was, however, able to provide particulars

[Continued on page 439

TABLE III: GENERAL

Foundations	
1. Type	Normal reinforced concrete strip
2. Depth	10ft including basement
3. Loading	3.2 tons per ft super
Superstructure Design	
a Factor of safety ...	3, without floors
b Wind load	Top 55ft. at 27 lb per ft super; Next 39ft at 19½ lb per ft super; Bottom 26ft at 15½ lb per ft super
c Snow load	15½ lb per ft super
Basic cost of materials in Germany	
Cement	77 DM. per 1,000 Kg
Aggregate	11.30 DM. per metre³ 0-7 mm.
	22.50 DM. per metre³ 7-30 mm.
Siporex blocks	67.0 DM. per metre³ 10 cm. thick
Timber for carcassing ...	150-185 DM. per metre³
Timber for joinery ...	250-400 DM. per metre³
Common bricks ...	75 DM. per 1,000

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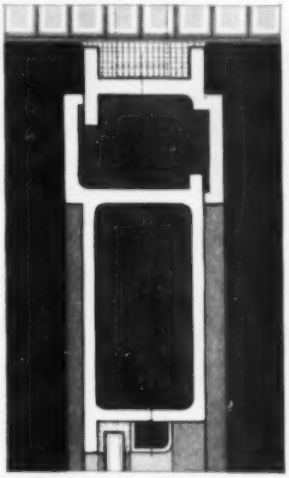

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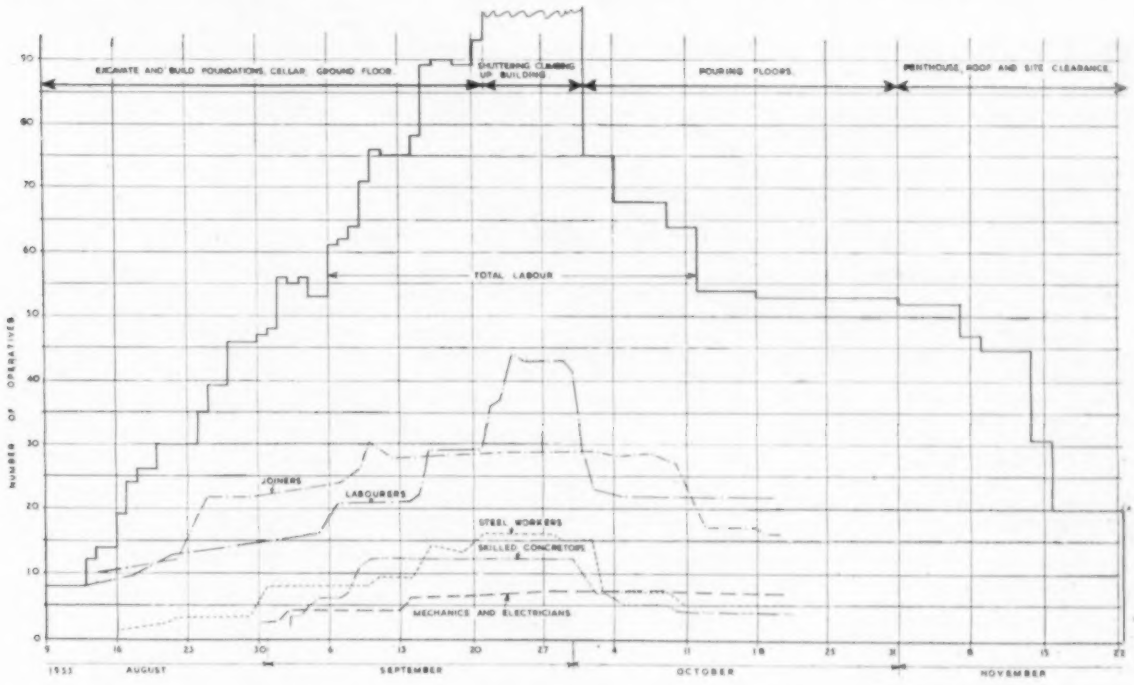

Fig. 6. Chart showing build-up of labour force. (Copy of original supplied by German Contractor.)

Continued from page 438

of the labour force employed (Figure 6) and from this the labour expenditure for certain trades has been calculated on the basis of a nine-hour day (Table IV). These calculations cover work on foundations, walls and floors.

TABLE IV: LABOUR EXPENDITURE

Trades			Man hours
General labourers			15,900
Carpenters			15,800
Steel reinforcement workers			5,300
Specialist concretors	foundations	1,700	
	superstructure	1,080	
	floors	1,220	
		...	4,000
Drivers and Plant Electricians			3,500
Total man hours			44,500

From this information it is possible to make a rough estimate of the production rate achieved in placing the concrete. Assuming that during the work on the superstructure the ratio of "specialist concretors" to "general labourers" was 1:1 and that most of the "drivers and plant electricians'" time would be spent on concreting, the total man hours for mixing and placing about 1,050 cubic yards of concrete and for placing the "Siporex" blocks was about 2,600. Allowing, say, 800 man hours for placing the "Siporex" blocks, then just over one thousand cubic yards of concrete was mixed and placed in 1,800 man hours; about $1\frac{3}{4}$ man hours per cubic yard.

This is not a particularly impressive rate of production but it must be remembered that this was a prototype building, that the walls were thin, and of an average height of working of 60ft, and that the placing was by no means as highly mechanized as seems possible. It appears, too, that although the walls and floors were completed rapidly, insufficient attempt had been made to phase in the subsquent operations to maintain the high tempo of the initial structural work. In the event, any real advantage of the speedy construction of the shells was lost by the almost complete cessation of building for several months due to frost. How far this was inevitable, and how far it was conditioned by the financial arrangements for building work in Germany, is rather outside the scope of this note.

Nonetheless, the production of the structural walls in ten days and the walls and floors in forty days is, with *in situ* construction a considerable achievement and the technique is obviously capable of further development. Another building of similar construction is due to be built in Bremerhaven in May of this year.

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* * *

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Modules Again

B.S.I. and B.R.S., who are jointly involved in the national and international investigations into the workability of modular co-ordination, held a press conference on this important subject last week. Those attending the conference were told that the subject has been viewed as one of such importance as a possible aid to productivity that, on the joint proposal of B.S.I. and B.R.S., the European Productivity Agency has voted a considerable sum of money to permit a concerted and very thorough eleven nation investigation to be made. The countries taking part are: Austria, Belgium, Denmark, France, Germany, Greece, Italy, Netherlands, Norway, Sweden, the United Kingdom, and the co-ordination has been placed in the hands of the United Kingdom.

The first meeting of delegates from the countries forming this international working party is being held at B.S.I. on Monday next, October 11. It is understood that the meetings will not only involve discussions between the experts studying the subject but include visits of examination of some of the work already designed and built on a modular basis in this country. It seems very proper that discussions on this subject should be held in the light and experience of practical building if the working party is to avoid the preparation of a report and recommendations which are theoretically sound but unworkable in practice.

The national work on the subject is being co-ordinated with the work for the E.P.A. Project and this is again divided between B.S.I. and B.R.S. as part of a carefully integrated programme of study. The opportunity of making the announcement about the European Project was taken to make statements on the activities of both these bodies in relation to the purely national problem. Both B.S.I. and B.R.S. have up to now been very silent on the progress they have been making since the publication of the B.S.I. Committee Report on the subject, B.S.1708, as long ago as 1951. It seems that B.S.I. collected the reactions from many national organizations to B.S.1708 and found that there was an even greater interest in the subject than had been expected, and in consequence a decision was reached by its Building Divisional Council to pursue the investigations further and on an increasing scale. A number of discussions were held which led to the appointment of a special member of the staff, Mr. Bruce Martin, who, with additional assistance, has been examining information on the form and dimensions of building materials and products, which is essential as a step towards deciding the relationship between these many products used in the industry. This work is said to be progressing steadily and that much data has already been collected but the study has not yet reached a point at which conclusions as to a possible basis for modular co-ordination can be put forward. In parallel with the B.S.I. work, B.R.S. has been making a study of the available information on the subject and also of buildings which have been erected on a modular basis.

It is gratifying to know that the vast amount of talk and the publicity which has been given to the idea of modular co-ordination, all of which seems to have been based on little or no fundamental evidence, is at last being tackled on a truly scientific basis so that within a year or two there should be some final indication as to whether the theories so frequently advanced are sound and workable from a practical point of view.

At the conference it was stressed that the studies have not reached a point at which it is possible to give a lead as to the best or any module for adoption in this country. It was recommended that until full information is available on which a true appraisement can be made manufacturers should not make changes to the dimensions of their products.

It was said that the Modular Society is co-operating with B.S.I. and it can be very helpful to the whole project as an agency for publicizing the modular idea. In recent months I have noticed much publicity emanating from the Society advocating the use of 4in multiples although the Society does not appear to have published its research evidence, if any, on which the decision to adopt 4in was made; one can only assume that the Society reached its conclusions merely because U.S.A. had adopted 4in and a number of European countries had adopted 10 cm, which is approximately the same size. It would seem that there must be a great deal more involved in agreeing to a system of modular co-ordination to cover such a wide range of production than merely making all materials and components to dimensions which are multiples of 4in. Moreover it seems certain that modular co-ordination cannot be as simple as the advice given by the Secretary of the Modular Society would lead one to believe from a recent issue of a contemporary journal where he says "make your component to overall dimensions of whole multiples of 4in with due allowance (plus or minus) for joints or jointing members" and "the formula is as simple as that." If a modular basis is to be adopted nationally we shall need much more precise guidance than this. It is hoped that the outcome of both of these national and international investigations will be to provide such detailed guidance. From my examination of the large volume of information on the subject the agreement of an acceptable basis for co-ordination appears to be hedged round with many problems and difficulties and, in consequence, I do not think we can expect to be given a truly final answer for quite a long time yet. If an answer is achieved it seems likely to involve something of a revolution in the building industry and it would certainly be wise that the whole subject should be approached slowly to ensure that the decisions reached will be both practicable and economically worthwhile.

It seems to me that the number of sizes of products produced by simple multiples of 4in in width, height and thickness which users might like to have is so great that no manufacturer could contemplate making such a range for stock purposes and would therefore be forced to make his own selection of sizes within the possible range; what is surely needed from a scheme of co-ordination is the emphasizing of certain sizes for normal production purposes which can be manufactured on some basis of preferred sizes. Ranges of preferred sizes reached by agreement between maker and user is the normal job of B.S.I. but these need some overall basis to co-ordinate the preferred sizes of one article with those of another. Only a full investigation of the many factors involved can provide the information on which such a basis for preferred sizes can be prepared, thus it seems most unwise to decide quite arbitrarily on a basis without such an investigation. Hasty decisions which might at some later time need to be altered would put an intolerable burden on the producing industries; thus it is essential that absolute certainty is reached on the method of co-ordination before serious steps are taken to make alterations to the materials and components in current production.

It was said at the conference that both B.S.I. and B.R.S. would be giving papers on their parts of the work to the Modular Society during the early months of next year. One must hope that some more concrete proposals will by then be available for preliminary discussions. Modular co-ordination, if it proves to be workable, appears to be the vital next step in standardization for the building industry as its materials, components and equipment are the products of such a wide range of manufacturers and thus call for proper relation for convenient and easy assembly.

DUTCH UNCLE

MINISTRY OF WORKS WINTER LECTURES FOR OCTOBER

The programme for October of discussion lectures arranged by the Ministry of Works on subjects of interest to the building industry is as follows:—

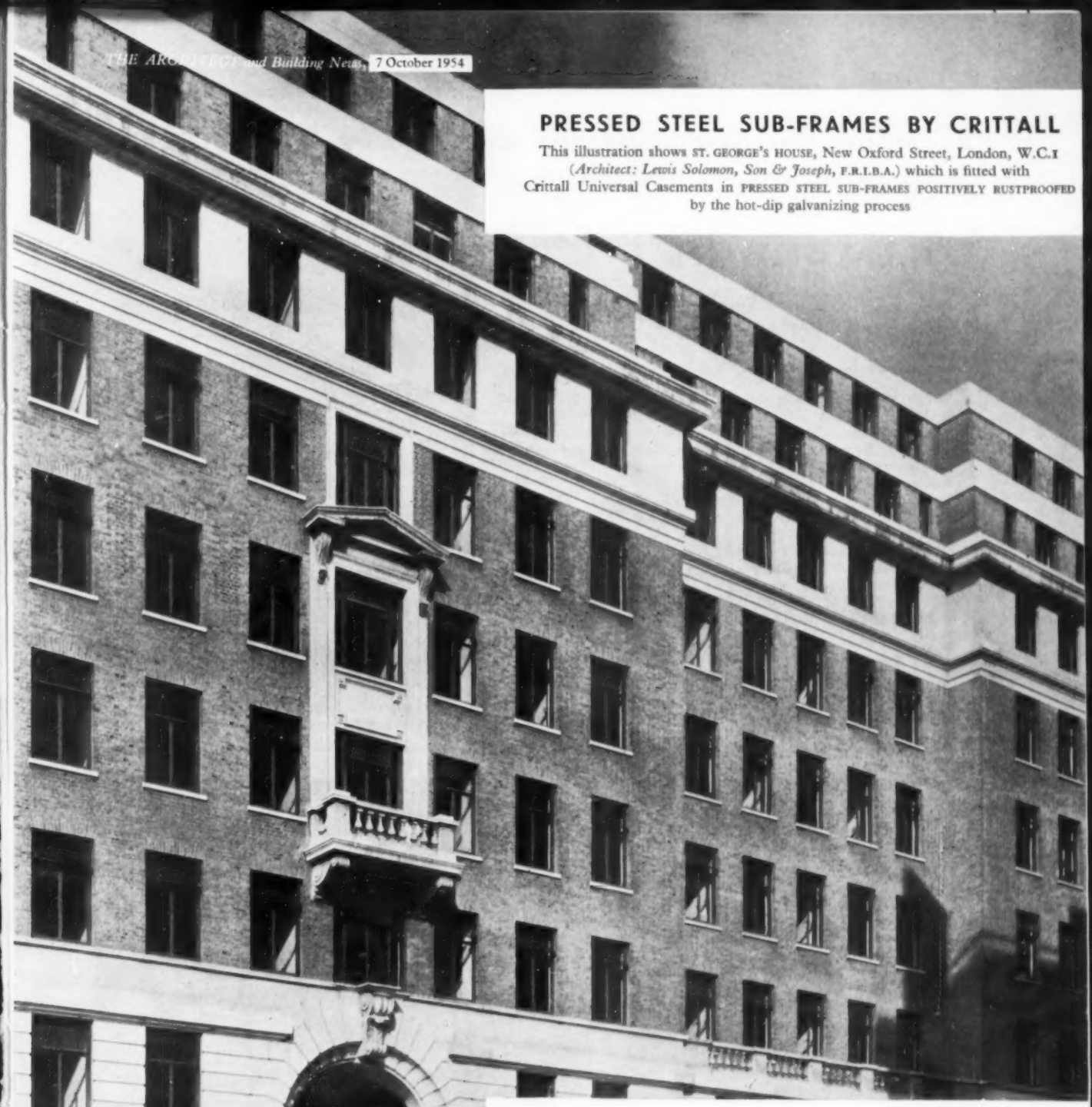
Oct. 12, 7.0 p.m.

Water Supply. Speaker: George S. Short, M.A., A.M.I.C.E., Borough Surveyor and Waterworks Engineer, County Borough of Darlington, at the Technical College, Northgate, *Darlington.*

Oct. 13, 7.0 p.m.

Introduction to Site Costing for Builders. Speaker: A. E. Chittenden, D.F.C., B.Sc., A.M.I.C.E., of M.O.W., at the Bognor Technical Institute, Southway, *Bognor Regis.*

[Continued on page 441



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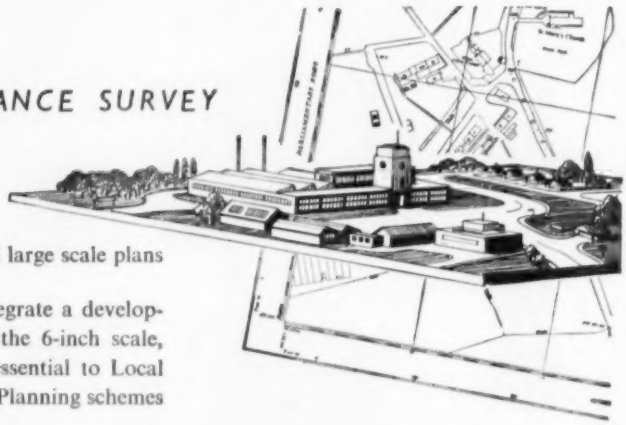

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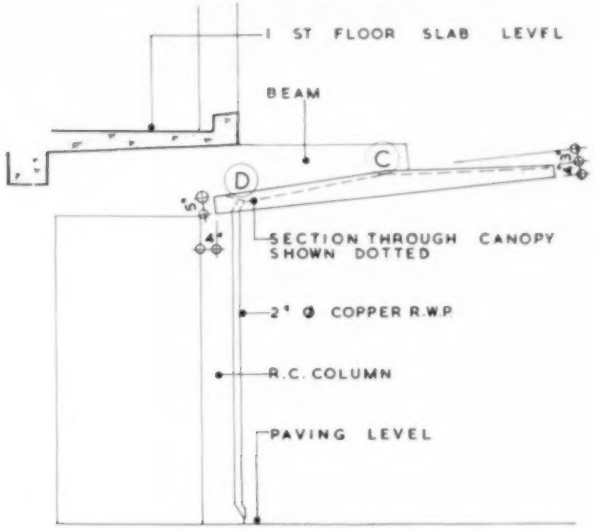
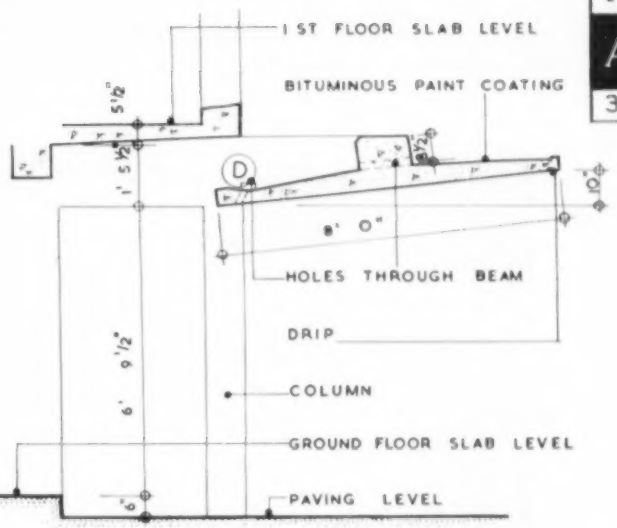
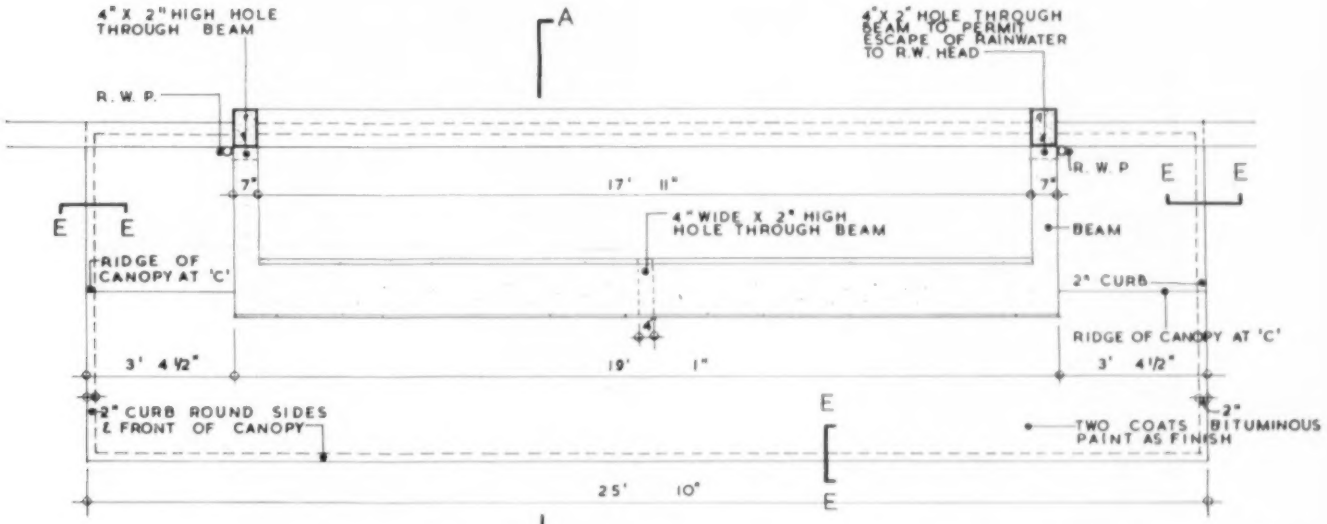
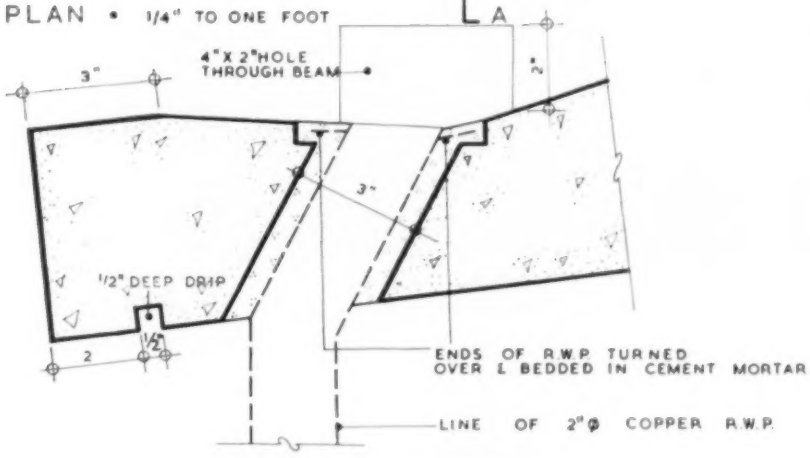




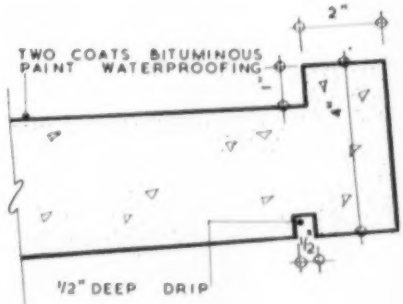
END ELEVATION • SCALE: 1/4" TO ONE FOOT • SECTION A-A



PLAN • 1/4" TO ONE FOOT



SECTION AT 'D' THROUGH R.W. OUTLET



SECTION E-E

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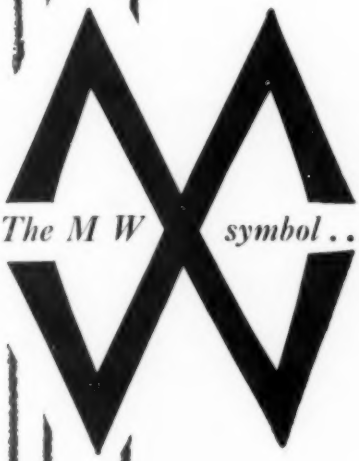

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Continued from page 440

Lessons from the Continental Motorways. Speaker: Professor W. Fisher Cassie, Ph.D., M.S., F.R.S.E., M.I.C.E., M.I.Struct.E., A.M.T.P.I., King's College, Newcastle-upon-Tyne, at the Technical Institute, Nelson Terrace, *Stockton-on-Tees.*

Oct. 13, 7.15 p.m.

Soil Mechanics in Highway Base Construction. Speaker: H. E. Brooke-Bradley, O.B.E., M.I.Struct.E., Deputy County Surveyor, Worcester, at the Council Room, The Preston & District Building Trades Employers' Association Offices, Starkie House, Starkie Street, *Preston.*

Oct. 14, 7.0 p.m.

Essentials of Good Concreting. Speaker: E. E. H. Bate, C.B.E., M.C., B.Sc., A.M.I.C.E., Chief Works Engineer, M.O.W., at the Technical College, Tonbridge Road, *Maidstone, Kent.*

Oct. 15, 7.15 p.m.

Lightweight Concrete. Speaker: H. A. Hodson, A.M.I.Struct.E., Building Research Station, at the Y.M.C.A. Hall, Shakespeare Street, *Nottingham.*

Oct. 18, 7.15 p.m.

The Structural Uses of Timber. Speaker: An officer from the T.D.A., at the Technical College, The Broadway, *Dudley.*

Oct. 19, 7.0 p.m.

Essentials of Good Concreting. Speaker: E. E. H. Bate, C.B.E., M.C., B.Sc., A.M.I.C.E., Chief Works Engineer, M.O.W., at the Public Library, Vernon Road, *Scarborough.*

Oct. 19, 7.15 p.m.

Waste Plumbing Fundamentals. Speaker: E. H. W. Gunton, M.I.S.E., Sanitary Engineer, M.O.W., at the Lecture Hall, School of Economics, Bell Street, *Dundee.*

Oct. 20, 7.0 p.m.

Paint—Its Manufacture and Use. Speaker: P. S. Symons, Director of the North British Chemical Company, *Manchester,* at the Bodhyfrid Hall, Chester Road, *Wrexham.*

Oct. 21, 7.0 p.m.

At the Marine Hydro, *Rhyl.*

Oct. 20, 7.0 p.m.

The Building (Safety Health and Welfare) Regulations, 1948. Speaker: An officer from the Inspectorate of the Factories Department, M.O.L. & N.S., at the Guildford Technical College, Stoke Park, *Guildford.*

Oct. 21, 7.0 p.m.

At the Technical College, High Street, *Chatham.*

Oct. 20, 7.15 p.m.

Essentials of Good Concreting. Speaker: E. H. MacMillen, B.Sc. (Eng.), M.I.C.E., M.I.Struct.E., Superintending Civil Engineer, M.O.W., at the College of Art and Technology, The Newarke, *Leicester.*

Hardwoods for Joinery and Finishings. Speaker: B. J. Rendle, B.Sc., A.R.C.S., Forest Products Research Laboratory, at the Technical College, Manor Croft, *Burton-on-Trent.*

Oct. 21, 7.15 p.m.

Waste Plumbing Fundamentals. Speaker: E. H. W. Gunton, M.I.S.E., Sanitary Engineer, M.O.W., at the Scottish Building Centre, 425, Sauchiehall Street, *Glasgow.*

Oct. 26, 7.15 p.m.

Latest Techniques for Electrical Installations in Small Buildings. Speaker: G. A. Wedge, A.M.I.E.E., Engineer, M.O.W., at the Ministry of Works Buildings, Ashley Street, *Birmingham.*

Oct. 27, 7.0 p.m.

Concrete Placing and Formwork. Speaker: A. B. Harman, B.Sc., A.M.I.C.E., of Messrs. George Wimpey & Co. Ltd. (Research Department), at the Gas Board's Showrooms, Sandgate Road, *Folkestone.*

Mining Subsidence. Speaker: Derek Turnbull, B.Sc., of the Mining Department, King's College, *Newcastle-upon-Tyne,* at the Marine and Technical College, *South Shields.*

Oct. 27, 7.15 p.m.

Opportunities and Prospects for Building Apprentices. Speaker: J. C. Cox, O.B.E., M.S.M., Secretary, Building Apprenticeship and Training Council, at the Gas Board's Lecture Theatre, Gas Showrooms, Town Hall Extension, Albert Square, *Manchester.*

Field Maintenance of Builders' Plant. Speaker: J. Stafford, of Messrs. George Wimpey & Co. Ltd., at the North Staffordshire Technical College, Cauldon Place, *Stoke-on-Trent.*

Oct. 28, 6.30 p.m.

Maintenance of Builders' Mechanical Plant. Speaker: H. E. Hodgson, Plant and Transport Manager, Messrs. John Laing and Son Ltd., at the Institute of Builders, 48, Bedford Square, *London,* W.C.1.

Oct. 28, 7.0 p.m.

Latest Techniques for Electrical Installations in Small Buildings. Speaker: G. A. Wedge, A.M.I.E.E., Engineer, M.O.W., at the Bognor Technical Institute, Southway, *Bognor Regis.*

Oct. 29, 7.15 p.m.

Good Practice in Domestic Drainage. Speaker: F. J. Crabb, B.Eng., M.I.C.E., F.R.San.I., Building Research Station, at the College of Art, Green Lane, *Derby.*

We Lag Behind in Efficient Electric Circuit Protection

BY T. C. GILBERT, M.I.E.E.

IN his Paper comparing electrical installation practice in Europe and the United States with our own, Mr. S. L. M. Barlow, Assoc. I.E.E., President of the Electrical Contractors Association, stressed the fact that in practically every country in the world miniature circuit breakers are employed for the protection of electric circuits where, in this country, ordinary fuses or switch fuses would be used. The occasion was this year's British Electrical Power Convention, and in the subsequent discussion it was affirmed that although electrical engineers are often desirous of using the alternative to fuses it is sometimes difficult to persuade architects and others concerned with buildings to adopt, to us, new and untried methods. The recent happenings at the opening meeting of the British Association at Oxford, where the assembled delegates sat in darkness for 30 minutes whilst the blown fuse was located and repaired should serve to emphasize the need for a re-orientation of ideas, not only for public and large buildings, but also for domestic purposes.

Mechanical circuit breakers are, of course, used in large numbers in industrial installations, and possess definite advantages over other methods, for in many cases it can be shown that apart from the uncontested gain in convenience their use can result in economy in maintenance and often a saving in capital costs. The earliest form of protection, the simple fuse, consisting of a short piece of wire with

Fig. 1 Six-way distribution board fitted with circuit breakers instead of fuseways. Each breaker is rated at 10 amperes.

a lower melting point than the conductors in the circuit, has now been developed to its apparent limit, but still remains a comparatively inefficient device. If there is overloading or an intermittent fault the tendency is for the user to replace the original wire with a thicker one, and the serious fire risk attending this practice has already been sufficiently emphasized in N.F.S. annual reports. Every householder knows the inconvenience of having to grope in the dark to find a blown fuse, but to-day the replacement of a fuse by a skilled electrician is a matter of some expense; it is rarely that this simple job can be done for anything less than 6s or 7s 6d, due to the present high cost of labour.

The small circuit breaker, designed to replace the fuse, has been available for some years in this country, but has not come into that wide use that efficiency demands. Objections that have been levelled against it are (a) it is more costly than the ordinary fuseway, and (b) it takes up very much more room. To-day the first cost is only slightly more than a standard cartridge type fuseway, and recently developed circuit breakers are much smaller than the original designs; a standard circuit breaker board is shown in Fig. 1, and the dimensions of this 6-way pattern overall are approximately 12in square with a depth of under 5in. The individual units are about 5in long, 1in wide and 2¾in deep, so that even larger boards would not take up undue space.

The convenience advantages of the circuit breaker are beyond doubt. After operation due to a fault, the affected circuit can be immediately identified by the position of the handle, and the circuit can be immediately restored by resetting; if the fault persists, the circuit breaker will not stay latched in, and the consumer cannot alter the setting or set up fire risks. In such places as hospitals, for instance, delay in replacing a blown fuse may have serious consequences, but a circuit breaker can be immediately reset by anyone handy; in petrol stores, factories, railways and laboratories circuit breakers have great advantages over fuses, and an instance has already been quoted of the real necessity to use these devices in public buildings.

There are two main functions that the simple fuse is expected to undertake, but unfortunately they rather militate against each other. For instance, a fuse designed to look after small overloads may prove something of a nuisance, especially where large banks of lamps or motor-driven gear are switched in suddenly, as it may blow immediately; on the other hand, if designed to stand up to low overloads and deal with earth faults or short circuits, the fuse will be useless for protection again low overloads of the order of 10 per cent, and small motors have been known to be burnt out by long-continued overloads of no more than 5 per cent. Every fuse must therefore be something of a compromise between the two requirements with the result that it performs neither function efficiently.

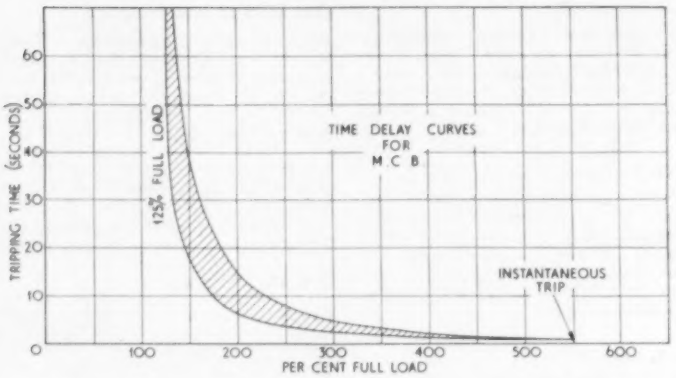

Fig. 2 Inverse time characteristic for thermally-operated trip on small circuit breakers; (additional to the instantaneous action of the magnetic trip).

On the other hand, the small circuit breaker has been designed to take care of both functions by being fitted with two entirely separate actions. One is a magnetic trip, giving instantaneous operation when the current passing becomes 125 per cent of the rating of the circuit breaker; thus, a circuit breaker rated at 30 amperes will open the circuit when the current passing reaches 37½ amperes, due to fault or leakage. This should be compared with the most efficient type of quick-acting fuse, which will operate only when 175 per cent of the rating is passing, that is, 52½ amperes for a 30 ampere rating; the ordinary rewirable fuse is much worse, as it will operate only with 250 per cent of rating, that is, 75 amperes passing for a rating of 30 amperes. The resultant safety associated with the use of circuit breakers is thus obvious at a glance, especially if there are circuit characteristics—and there are likely to be several—that may make the heavier currents persist over the fault for a longer fire-raising period.

Regarding the small, long-continued overload that can be so damaging to electrical equipment, the circuit breaker looks after this by means of a second action, governed by the thermal effect of the current passing; this has a delayed operation, with inverse time characteristics, and can be best shown by means of the graph in Fig. 2. This second action consists of a hermetically sealed hydraulic action, backing up the instantaneous magnetic action, and, as the graph shows, at about six times the rating even this delayed action trip becomes almost instantaneous.

The emphasis to-day is for protection against *fire* in electrical installations, the less important matter of protection against shock fading into comparative insignificance since N.F.S. reports over the past few years have indicated that fires initiated in electrical circuits amount to some 18 per cent of the total reported, and nearly all due to inefficient overload protection. Modern small circuit breakers are completely reliable and can provide greatly improved circuit protection, which cannot be tampered with by the consumer but affording him much greater convenience. It is for this reason that the use of these devices should be more widely expanded, as is happening on the Continent and in the Colonies; one manufacturer alone in the United States claims to have sold over 15 million of these devices, as reported in Mr. Barlow's Paper. Need our famed insularity prevent us from following suit?

Permission by Messrs. Dorman & Smith, Ltd., to use the illustration in Fig. 1 and the operational graph in Fig. 2 is acknowledged.

A Development in Copying

Although, since their introduction shortly after the first world war, dyeline processes have been steadily improved and developed until a good print from a good original can be guaranteed, the process has in the past depended upon the strength of line or the quality of the contrast between line and translucent paper or cloth.

Nowadays, because of various economic factors, many drawings are hurriedly produced, often in pencil on a heavy tracing paper. Consequently it has been increasingly difficult to produce a print of even reasonable legibility. In view of this tendency, the research chemists of Hall Harding, Ltd., have developed a dyeline process which will produce better prints from weak line or poor contrast originals. This new process, applied to both the Unax and Amonax ranges, includes a new technique in coating for which a patent has been applied.

In order that the manufacturer's claims may be examined, people interested may write for test rolls, application being made to the head office, Stourton House, Dacre Street, S.W.1. An application form is included in the descriptive folder issued by Hall Harding.

CONTRACT • NEWS •

Notes below give basic data of contracts open under locality and authority which are in bold type. References indicate: (a) type of work, (b) address for application. Where no town is stated in the address it is the same as the locality given in the heading, (c) deposit, (d) last date for application, (e) last date and time for submission of tenders. Full details of contracts marked ★ are given in the advertisement section.

OPEN

BUILDING

BILLERICAY U.C. (a) 1 block of 4 garages, Tattenham Road, Laindon; 1 block of 6 garages, Cromer Avenue, Laindon; 1 block of 6 garages, Langham Crescent, Billericay. (b) Council's Surveyor, Council Offices, 108, High Street. (c) 2gns. (d) Oct. 9.

* * *

BIRMINGHAM C.C. (a) 15 shops with flats over on a site in Ingoldsby Road, Bunbury Road Estate. (b) City Architect, Civic Centre, 1. (c) 2gns. (d) Oct. 18. (e) Nov. 22.

* * *

CARLTON U.C. (a) Block of 6 and block of 2 lock-up garages on sites at junction of Coningswath Road and Elmhurst Avenue. (b) Engineer and Surveyor, Council House, Burton Road, Carlton, near Nottingham. (c) £2. (e) Oct. 20.

* * *

CORNWALL C.C. (a) Ambulance depot, Hooper Street, Torpoint. (b) County Architect, County Hall, Truro. (c) 2gns. (d) Oct. 9. (e) Nov. 6.

* * *

COVENTRY C.C. (a) Construction of Limbrick Wood Nursery School, Tile Hill, for 80 pupils. (b) City Architect, Bull Yard. (c) 2gns. (e) Nov. 9.

* * *

DOVER B.C. (a) 20 houses with services and site works, Old Folkestone Road, Aycliffe, Dover. (b) Borough Engineer, Brook House. (c) 2gns. (e) Oct. 20.

* * *

DURHAM C.C. (a) Erection of the following schools: Bowburn Modern; Billingham North Modern; Bishop Auckland, Woodhouse Close County Infants'; Durham, Framwellgate Moor County Junior; Bishop Auckland Technical College (first instalment — workshop block); Horden Special; Felling, Wardley County Infants'; Stanley (South Stanley) County Infants'. (b) County Architect, Court Lane, Durham. (d) Oct. 9.

* * *

ESSEX C.C. (a) New milking parlour, cattle sheds, yards and farm buildings, Bretts Farm, Belhus Estate, Aveley. (b) County Land Agent and Valuer, 69, Duke Street, Chelmsford. (e) Oct. 20.

* * *

ESSEX C.C. (a) Erection of hutted branch library, Petersfield Avenue, Harold Wood Estate, Romford. (b) County Architect, County Hall, Chelmsford. (d) Oct. 16.

* * *

FARNHAM U.C. (a) 24 houses, 1 block of 4 flats and 1 pair of bungalows, Black Pond Lane, Lower Bourne. (b) Messrs. Gilbert and Hobson, 69a, Castle Street. (c) £2. (e) Oct. 29.

* * *

HAZEL GROVE AND BRAMHALL U.C. (a) Improvement and reconstruction of Bosden Fold Road, Hazel Grove. (b) Engineer and Surveyor, Council House, Hazel Grove. (c) 2gns. (e) Oct. 19.

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KINGSTON-UPON-THAMES B.C. AND MALDEN AND COOMBE B.C. (a) Erection of (1) 8 houses; (2) 1 4-storey block of 8 flats and 1 3-storey block of 4 shops and 5 maisonettes, Kingsnympton. (b) Secretary, Housing (Kingsnympton part) Joint Committee, Royal Borough of Kingston-upon-Thames and Borough of Malden and Coombe, Municipal Offices, New Malden, Surrey. (d) Oct. 16.

* * *

LINCOLN C.C. (a) Alterations and additions to Stubton Hall Boarding and Special School. (b) County Architect, County Hall, Sleaford. (e) Oct. 25.

* * *

LIVERPOOL C.C. (a) Sports pavilion, Leyfield Road, Liverpool, 12. (b) City Architect, Blackburn Chambers, Dale Street, Kingsway, 2. (c) 2gns. (e) Oct. 16.

* * *

LONDON—SOUTHGATE B.C. (a) Erection of a composite single-storey building at entrance to Southgate Cemetery. (b) Borough Engineer, Town Hall, Palmers Green, N.13. (c) 2gns. (e) Oct. 26.

* * *

MAIDENHEAD B.C. (a) Public conveniences and lavatories, Oaken Grove Playing Fields. (b) Borough Engineer, 14, Craufurd Rise. (c) 2gns. (e) Oct. 22.

* * *

MANCHESTER C.C. (a) New garage and boiler house, Russel Road Cleansing Depot, Blackley Hill. (b) City Architect, Town Hall. (c) 1gn. (e) Oct. 27.

* * *

MONMOUTHSHIRE C.C. (a) New infants' school, Oakfield Road, Cwmbran. (b) County Architect, Queen's Hill, Newport. (c) 5gns. (e) Oct. 27.

* * *

NEWTOWN AND LLANIDLOES R.C. (a) 8 houses at Adfa. (b) W. B. Bond, Windsor House, 49, Calthorpe Road, Edgbaston, Birmingham, 15. (c) 2gns. (d) Oct. 15.

* * *

NORFOLK C.C. (a) Small police station with 3 houses adjoining, Caister-on-Sea. (b) County Architect, 27, Thorpe Road, Norwich. (d) Oct. 11.

* * *

NORTHERN IRELAND HOSPITALS AUTHORITY. (a) Erection of next stage of General Hospital at Londonderry, comprising the nurses' home, houses at gatehouse, all known as Contract 5. (b) Secretary, Northern Ireland Hospitals Authority, 44-46, Queen Street, Belfast. (d) Oct. 14. (e) Nov. 24.

* * *

SCOTLAND—EDINBURGH C.C. (a) Alterations and additions to toilets at the Synod Hall, Castle Terrace. (b) City Architect, City Chambers. (e) Oct. 15.

* * *

SCOTLAND—KIRKCALDY B.C. (a) 150 houses at Bogie Mains Nos. 1 and 2 sites; all trades. (b) Messrs. James Gentles and Son, Osborne House. (e) Oct. 29.

* * *

SCOTLAND — NORTH BERWICK T.C. (a) All trades in connection with joining Burgh Clubhouse and Golf Pavilion. (b) Burgh Surveyor, 2, Quality Street.

* * *

SHEFFIELD C.C. (a) King Egbert Secondary Technical School for Girls, Furniss Avenue, Totley. (b) City Architect, Town Hall, 1. (c) £2. (e) Oct. 15.

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SUFFOLK AND IPSWICH FIRE AUTHORITY. (a) Extensions to fire station at Aldeburgh. (b) Architect to the Authority, County Hall, Ipswich. (c) 2gns. (e) Nov. 2.

* * *

WEMBLEY B.C. (a) Sports pavilion, Roe Green Park. (b) Town Hall, Wembley. (c) 2gns. (e) Oct. 22.

* * *

WOKING U.C. (a) Erection of following houses on Barnsbury Farm Estate: Contract No. 5—40 houses; Contract No. 6—73 houses; Contract No. 7—57 houses. (b) Council's Architect, Council Offices. (c) 2 gns. (e) Dec. 13.

* * *

WOKING U.C. (a) 30 prefabricated concrete garages on 4 housing estates within the Urban district. (b) Engineer and Surveyor, Council Offices. (c) 2gns. (e) Oct. 18.

* * *

WORCESTER C.C. (a) 10 houses, Dines Green Estate. (b) City Engineer, 22, Bridge Street. (c) £3. (e) Oct. 20.

PLACED

Notes on contracts placed state locality and authority in bold type with (1) type of work, (2) site, (3) name of contractor and address, (4) amount of tender or estimate. † denotes that work may not start pending final acceptance, or obtaining of licence, or modification of tenders, etc.

BRADFORD CORPORATION. (1) 256 houses, 44 flats. (2) Parkside Road Estate. (3) Offer of Geo. Wimpey and Co., Ltd., recommended. (4) £447,188. (1) 75 flats, 72 maisonettes. (2) Thorpe Edge Estate. (3) Offer of Geo. Wimpey and Co., Ltd., recommended. (4) £233,433. (1) 384 dwellings. (2) Halifax Road. (3) Direct Labour. (4) £534,280.

* * *

BERMONDSEY B.C. (1) 78 flats, 2 shops. (2) Linsey Street. (3) Direct Labour. (4) £190,856.

* * *

LONDON. (1) Block of offices. (2) Fleet Street, E.C.4, for Hultons Press, Ltd. (3) Sir Robert McAlpine and Sons, Ltd., 80, Park Lane, London, W.1.

* * *

LONDON. (1) Block of offices and showrooms. (2) High Holborn and Eagle Street. (3) Bernard Sunley and Sons, Ltd., 34, St. James's Street, London, S.W.1.

* * *

LONDON. (1) Further reinstatement for the Governors of Charterhouse. (2) Charterhouse, E.C.1. (3) Ward and Paterson, Ltd., 7, Welbeck Street, London, W.1. (4) £47,000.

* * *

BRIDGEND U.D.C.—(1) 79 houses and flats. (2) Brackla site. (3) Gee, Walker and Slater, Ltd., Coychurch Road, Bridgend, Glam. (4) £91,950.

* * *

LONDON. — (1) Headquarters for National Union of Municipal and General Workers. (2) Endsleigh Street, W.C.1. (3) Y. J. Lovell and Son, Ltd., 6 Bathurst Street, London, W.2. (4) About £250,000.

* * *

MACCLESFIELD B.C.—(1) 96 houses. (2) Hurdsfield. (3) Kenyon Construction Co., Ltd., Ardwick, Manchester. (1) 75 houses. (3) Macclesfield and District Association of Building Trade Employers.

* * *

BRIGHTON CORPORATION. — (1) Factory. (2) Lower Bevendean, for Harrimonde, Ltd., of Brighton. (3) Rice and Son, Ltd., 23, Gloucester Place, Brighton. (4) £69,936.

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LONDON. — (1) Nine-storey office block. (2) Tavistock Square, W.C.1. (3) John Laing and Son, Ltd., London, N.W.7. Work begun.

* * *

TYNEMOUTH B.C. (1) 216 houses. (2) Chirton Grange Estate. (3) William Leech (Builders), Ltd., 2, Clayton Street, Newcastle-on-Tyne. (4) £274,708.

* * *

BRIGHTON CORPORATION. — (1) Joint infants' and voluntary school for St. Joseph's School Managers. (2) Hollingdean. (3) Saunders (Contractors), Ltd., London Road, Burgess Hill, Sussex. (4) £49,070. (1) 18 flats, 6 shops, etc. (2) St. George's Road. (3) Rice and Son, Ltd., Gloucester Place, Brighton. (4) £52,234.

* * *

EAST ANGLIAN REGIONAL HOSPITAL BOARD. (1) Additions, etc., to surgical block. (2) Papworth Sanatorium, Cambridge. (3) Coulson and Son, Ltd., 37, St. Andrew's Street, Cambridge. (4) £102,088.

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End Strainers	5″ x 5″ x 6′ 0″	150 lbs.
Hand Gate Posts	5″ x 5″ x 6′ 0″	150 lbs.
Field Gate Posts	8″ x 8″ x 6′ 0″	380 lbs.
Lamb Pasture Posts	4″ x 4″ to 3″ x 3″ x 3′ 0″	36 lbs.
Struts	4½″ x 4½″ to 3″ x 3″ x 6′ 0″	84 lbs.

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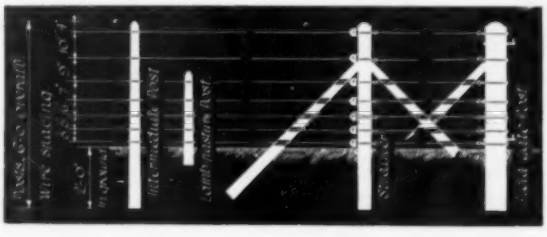

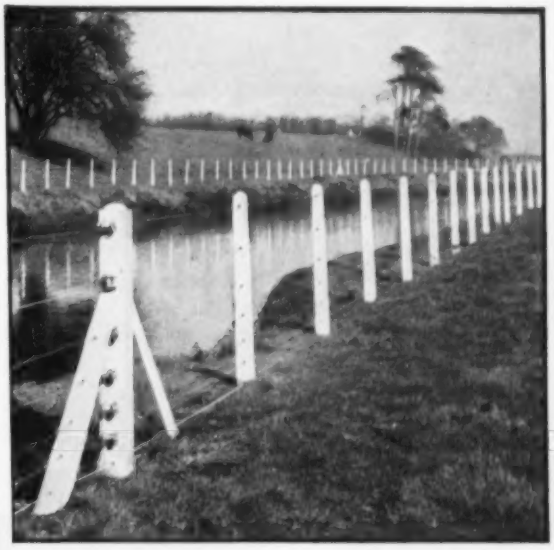

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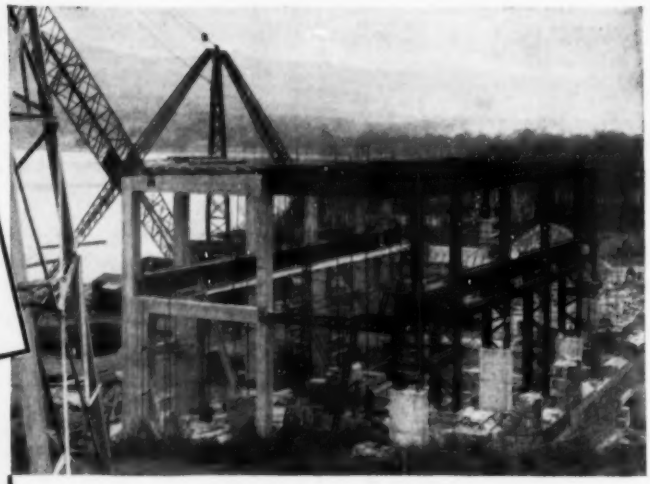

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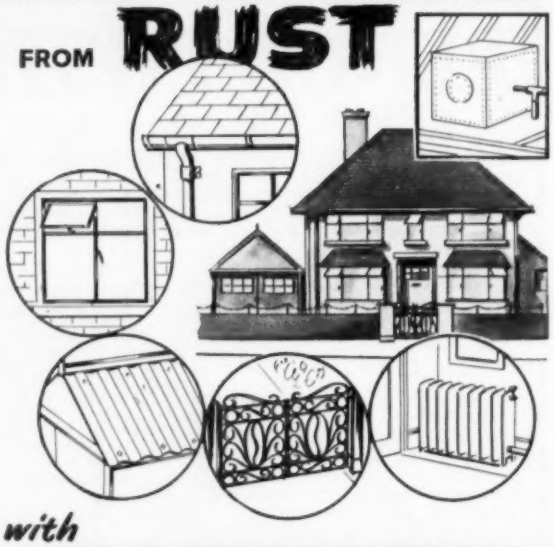

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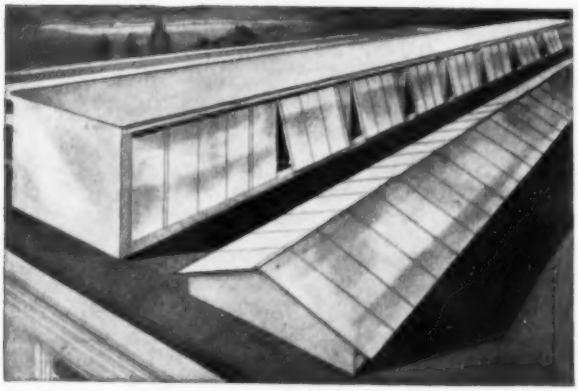

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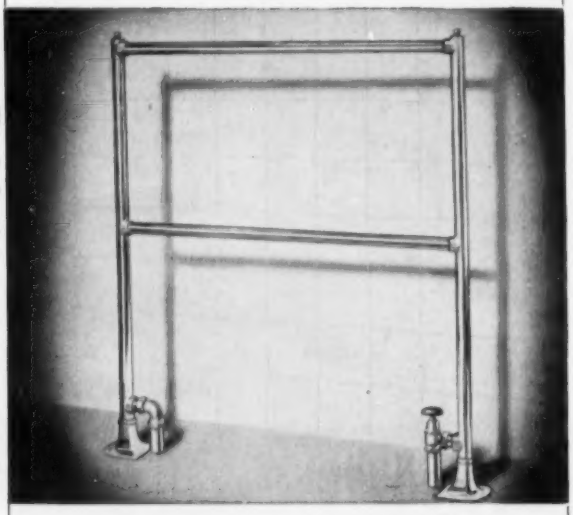

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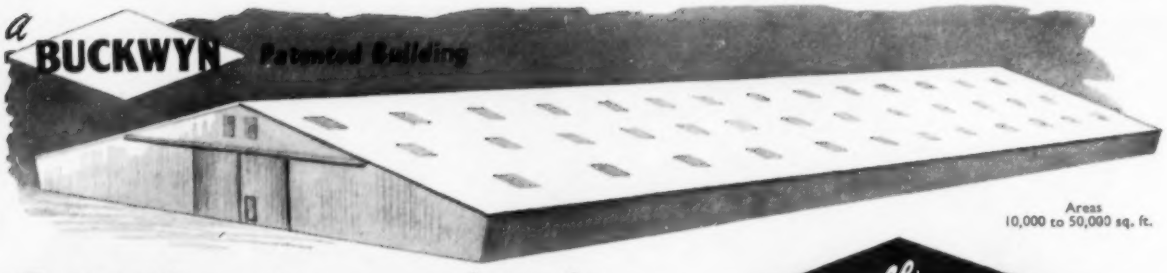

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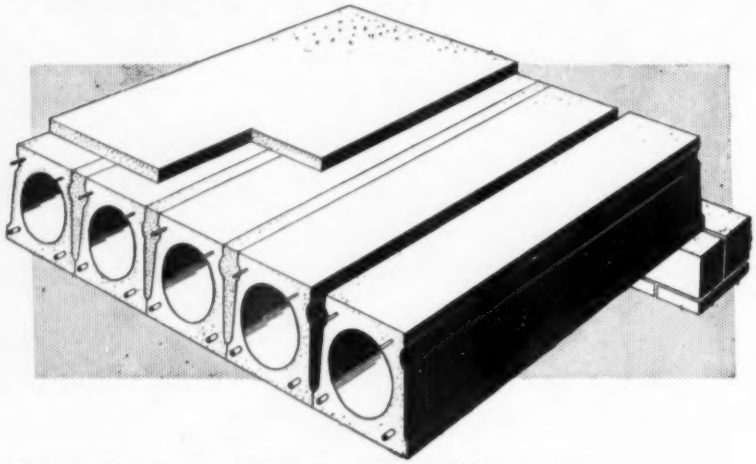

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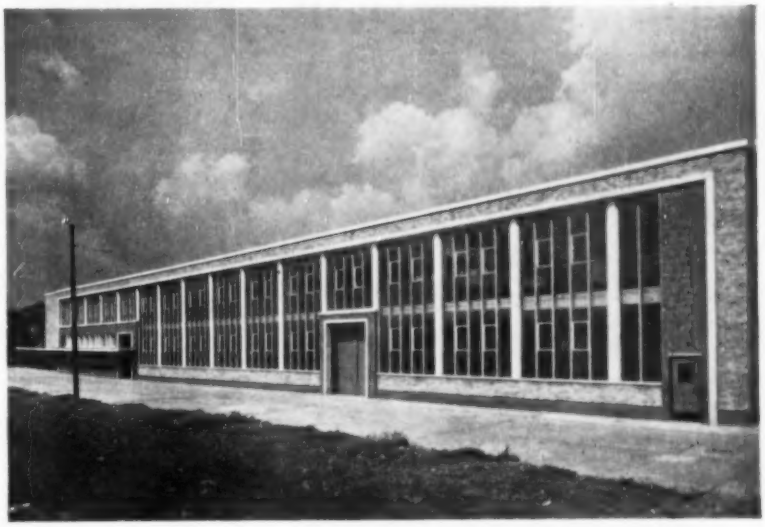

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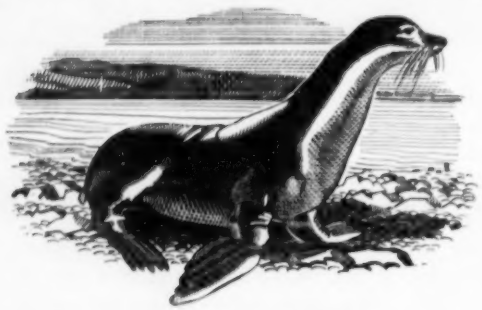

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It is a big School; it will take 2,000 pupils. And those who really must have some kind of formula to hang on to may be interested to know that it worked out at 'two girls to a gallon'.

Send for your copy of the new colour card of Silcolac and Duresco Enamel gloss finishes.

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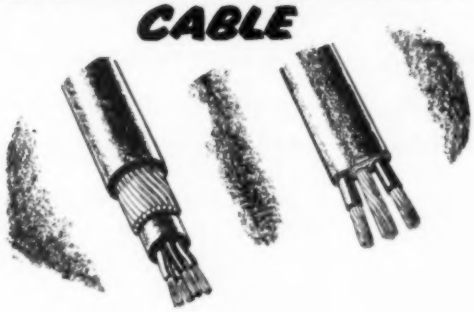

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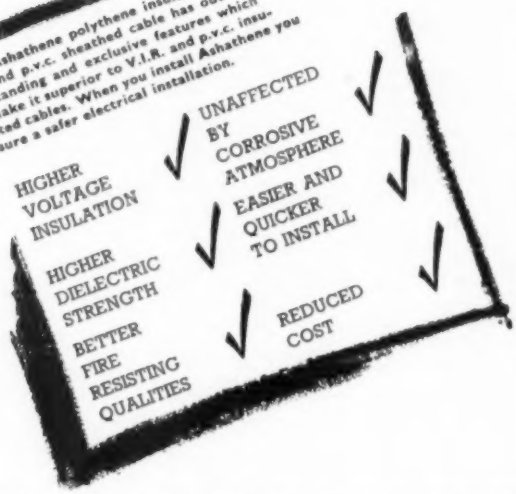

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APPOINTMENTS

The engagement of persons answering these advertisements must be made through the local office of the Ministry of Labour and National Service, etc., if the applicant is a man aged 18–64 or a woman aged 18–59 inclusive, unless he or she or the employer is excepted from the provisions of The Notification of Vacancies Order, 1952.

COUNTY BOROUGH OF DUDLEY.

ASSISTANT ARCHITECT GRADE V.

(Amended Advertisement.)

APPLICATIONS are invited from Associates R.I.B.A. for the above appointment in the Department of the Borough Architect.

Applications, stating age, qualifications and experience and giving the names of two referees, should reach me not later than 15th October, 1954.

P. D. WADSWORTH,
Town Clerk.

The Council House,
Dudley. [8382

BOROUGH OF WREXHAM.

ARCHITECTURAL APPOINTMENT.

APPLICATIONS are invited for the appointment of ARCHITECTURAL ASSISTANT in connection with Capital Works at a salary in accordance with A.P.T. Grade V £620 to £670 per annum.

Applicants should be Associate Members of the R.I.B.A. or equivalent qualification and have general experience in the design and development of neighbourhood units, Municipal Buildings and general architectural work undertaken by a Local Authority, and Planning experience will be an advantage.

The Council is prepared to offer housing accommodation to the successful applicant, if married.

Form of Application and Conditions of Service may be obtained from the Borough Engineer & Surveyor, 31, Chester Street, Wrexham. Applications on the prescribed form together with copies of two recent testimonials and the names of two referees should be delivered to the undersigned in an envelope endorsed "Architectural Assistant" not later than Monday, 18th October, 1954.

PHILIP J. WALTERS,
Town Clerk.

Guildhall, Wrexham.
22nd September, 1954. [8384

AIR MINISTRY require in London, Provinces and overseas ARCHITECTURAL ASSISTANTS in Works Department Design Branch experienced in planning/preparation of working drawings and details for permanent and semi-permanent buildings. Salaries up to £780 p.a. for men, £665 for women. Starting pay dependent upon age, qualifications and experience. Extra duty allowance or overtime payable. Promotion prospects. Posts non-pensionable with long-term possibilities. Natural born British subjects only. Write stating age, qualifications, employment details including type of work done to—Ministry of Labour, 236, Walworth Road, London, S.E.17, quoting Order 81AD. [8307

LONDON COUNTY COUNCIL.

ARCHITECT'S DEPARTMENT.

VACANCIES for ARCHITECTS, Grade III (up to £892 10s), and ARCHITECTURAL ASSISTANTS (up to £739 10s) in Schools and Housing Divisions.

Particulars and application forms from Architect (AR/EK/A/3), County Hall, S.E.1. (1058.) [0146

BOROUGH OF HARTLEPOOL.

ARCHITECTURAL ASSISTANT.

SALARY A.P.T. Grade IV (£580/£625) (revised grading £600/£640 to operate from 1st January, 1955). Housing accommodation available if necessary. Applications, giving particulars of age, qualifications and experience, together with the names of two referees, to reach the Town Clerk, Borough Buildings, Hartlepool, not later than 16th October, 1954. [8396

APPOINTMENTS—contd.

METROPOLITAN WATER BOARD.

APPOINTMENT OF ASSISTANT ARCHITECTS.

THERE are vacancies for ASSISTANT ARCHITECTS on the permanent pensionable staff. Salary scale £744-£911 per annum by annual increments. Commencing salary according to age and experience. Maximum age 45 years. It is a condition of the appointment to and the holding of the positions that the selected candidates shall be and continue to be subscribing corporate members of the Royal Institute of British Architects.

Housing accommodation may be available, if required in a good neighbourhood, at an inclusive rent of £130 per annum.

A form of application may be obtained from the undersigned on receipt of a stamped addressed foolscap envelope quoting reference (G.P.2) and completed applications must arrive not later than 22nd October, 1954.

W. S. CHEVALIER,
Clerk of the Board.

Offices of the Board, New River Head, Rosebery Avenue, London, E.C.1. [8391

BASILDON DEVELOPMENT CORPORATION.

APPLICATIONS are invited for the following posts on the staff of the Chief Architect/Planner, Noel Tweddell, A.R.I.B.A.:

(a) GRADE III ARCHITECT, salary £860–£1,110 per annum.
(b) GRADE IVB ASSISTANT ARCHITECTS, salary £760-£860 per annum.
(c) GRADE IVA ASSISTANT ARCHITECT, salary £660-£760 per annum.

The successful applicant for post (a) will be required to take charge of a Housing Group and must have considerable experience in the design and supervision of large housing contracts and all stages of contract management to completion of final accounts.

One applicant for post (b) will be selected to work in a Housing Group and must have experience in contemporary house design, preparation of working drawings and supervision of contracts, and another applicant will be selected to work in the Industrial Section and must have experience in the design of small and medium size contemporary factories, preparation of working drawings and the supervision of contracts.

The successful applicant for post (c) will work in a Housing Group and must have experience in contemporary house design, preparation of working drawings and supervision of contracts.

All applicants must have a professional qualification in Architecture.

The commencing salary within each grade will be in accordance with experience and ability. All appointments are subject to the provisions of the Local Government and Other Officers Superannuation Act, and medical examination.

House accommodation in the New Town may be available.

Applications must be made on the special form (obtainable from the Chief Architect) to the General Manager, Basildon Development Corporation, Gifford House, Basildon, Essex, by 20th October, 1954, and the envelope endorsed with the relevant appointment. [8394

LONDON ELECTRICITY BOARD.

ARCHITECTURAL DRAUGHTSMEN.

APPLICATIONS are invited for the above positions in the Architect's Section of the Chief Engineer's Department in Central London.

Applicants should be neat draughtsmen and preferably have had several years' experience in an Architect's office.

The post is graded under Schedule "D" of the National Joint Board agreement as Grade 6—£458 to £595 7s per annum, inclusive of London Allowance.

Application forms obtainable from Personnel Officer, 46, New Broad Street, E.C.2. Please enclose addressed envelope and quote ref. V/1785/AA on envelope and all correspondence. [8385

APPOINTMENTS—contd.

BOROUGH OF WALTHAMSTOW.

BOROUGH ARCHITECT, ENGINEER & SURVEYOR'S DEPARTMENT.

SENIOR ASSISTANT ARCHITECTS.

APPLICATIONS are invited for two appointments on Grades A.P.T. VII/VIII (£765-£890, inclusive of London Weighting), commencing salary according to experience. Applicants must be Registered Architects.

Applications with names of two references should be received by the undersigned not later than noon on Monday, 25th October, 1954, endorsed "Senior Assistant Architect."

G. A. BLAKELEY,
Town Clerk.

Town Hall,
E.17. [8397

CITY OF OXFORD EDUCATION COMMITTEE

COLLEGE OF TECHNOLOGY, ART & COMMERCE

Appointment of FULL-TIME STUDIO YEAR-MASTER, SCHOOL OF ARCHITECTURE AND BUILDING

APPLICATIONS are invited from suitably qualified architects, preferably from those holding the Degree or Diploma of a Recognised School, for the above-named post. Duties include student work and some lecturing to students in the Diploma and Part-time courses.

Salary in accordance with Grade B, Burnham Technical Award, i.e. (men) £525×£25 (11)×£20—£820 per annum, with additions for degree or equivalent and appropriate training and increments for approved teaching and/or professional experience.

Forms of application and further particulars may be obtained on receipt of a stamped addressed envelope from the Chief Education Officer, 77, George Street, Oxford, to whom completed forms should be returned within 14 days of the date of the appearance of this advertisement. [8402

NATIONAL COAL BOARD.

NORTH EASTERN DIVISION.

APPLICATIONS are invited for the following appointments to the staff of the Divisional Chief Architect at Denaby Main, near Doncaster:—

1. ARCHITECTURAL ASSISTANT Grade II.
Scale: £440×£20 to £540 per annum.
Applicants should have passed the Intermediate Examination of the Royal Institute of British Architects, and have had some subsequent practical experience, and should be able to prepare sketch plans and working drawings under supervision and have a sound knowledge of building construction.
The point of entry into this Grade will depend upon qualifications and experience.

2. JUNIOR ARCHITECTURAL ASSISTANT.
Scale: £2 17s 6d per week at 16 years of age rising to £8 per week at 25 years of age, according to age.
Applicants should have obtained their General Certificate of Education in sufficient subjects to enable them to proceed with the Intermediate examination of the Royal Institute of British Architects, and should preferably be studying for such examination.

The work of the office consists chiefly of Pithead Baths, Canteens, Medical Centres, Offices, Laboratories, etc.

Application Forms may be obtained from the Divisional Chief Architect, J. A. Dempster, F.R.I.B.A., Architect's Department, National Coal Board, P.O. Box No. 4, Denaby Main, Doncaster, and when completed should be returned not later than the 18th October, 1954. [8408

APPOINTMENTS—contd.

BOROUGH OF WALTHAMSTOW.

COMMITTEE FOR EDUCATION.

ARCHITECT'S DEPARTMENT.

APPLICATIONS are invited for the following permanent appointments in the office of the Architect to the Committee, Mr. Frank H. Heaven, A.R.I.B.A., A.R.I.C.S.

(a) ASSISTANT ARCHITECT at a salary in accordance with Grade A.P.T. VII of National Scales (at present £735 rising by increments of £25 to £810 per annum).

Applicants must be Associate Members of the R.I.B.A. or hold an equivalent qualification and have had considerable experience in design, construction, and contract administration with a local authority.

(b) ARCHITECTURAL ASSISTANT at a salary in accordance with Grade A.P.T. IV of National Scales (at present £580 rising by increments of £15 to £625 per annum).

Applicants should have passed the R.I.B.A. Intermediate Examination or its equivalent at one of the recognized Schools of Architecture and have worked in an architectural office for a period of at least two years.

(c) ARCHITECTURAL ASSISTANT at a salary in accordance with Grade A.P.T. II of National Scales (at present £520 rising by increments of £15 to £565 per annum).

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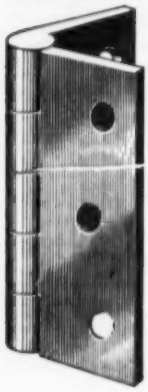

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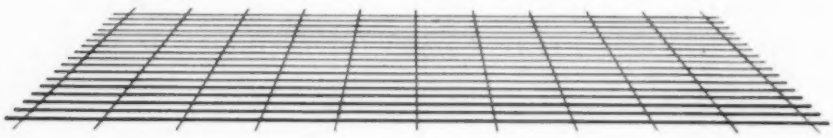

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